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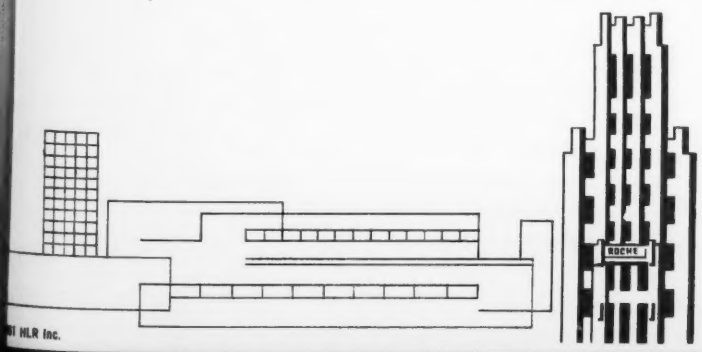

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Nutley 10, New Jersey: North 7-5000 New York City: Oxford 5-1400

In Canada: Hoffmann-La Roche Limited, Vitamin Place, 1956 Bourdon Street, St. Laurent, Montreal 9, P.Q.

HLR Inc.

YOU'RE RIGHT IT'S ROCHE

Drug and Cosmetic Industry

Contents **May 1961 Vol. 88 No. 5**

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Trade Mark Record and Supplements. Complete trade-mark listing of perfumes and cosmetics. $15.00.

Books. Technical information for manufacturers of drugs and cosmetics.

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MAY 24 1961

"It'll either make us or break us."

Keeping Posted

Trade Mark Register for Comedians?

It may be advisable for comedians to conduct a trade mark search before they start some of their skits. According to a story in *The New York Times*, a spoof by television comedian Louis Nye of what he thought was a non-existent sleeping potion called Snooze has involved him, the Jack Paar Show, and the National Broadcasting Company in a libel suit.

The suit was brought by the Harwood Pharmacal Company of New Jersey which contends that it makes a sleeping product called Snooze, and that the company and product have been damaged by the skit. The New York Court of Appeals rejected a motion by the defendants to dismiss the suit, the court holding that the company had a right to sue over the alleged libel.

The company's complaint charges that Louis Nye, in a skit on the Jack Paar show, poked fun at a sleep product called Snooze, while the defendants have insisted that the comedian was unaware that there was a product called Snooze and had used the term as a fictitious one.

Sales of Toilet Goods

Total sales of perfumes, cosmetics and toilet preparations, not including toilet soaps, for the year 1960 at retail value have been estimated by the Toilet Goods Association at $1,784,000,000, an increase of approximately 7¼ per cent over 1959 sales.

Dentifrice sales continued to increase at the normal 3 per cent rate, but food store sales of these products were 5 per cent greater, as against a small decline in drug outlet sales. Shaving cream sales increased by more than 8½ per cent, but food store sales were 13 per cent ahead of last year and drug store sales only 5 per cent greater.

Hair preparations, especially hair coloring preparations, were a particularly bright spot, while the recent decline in the use of home permanent preparations seems to have been halted.

Fragrance preparations, and especially colognes and toilet waters, showed a substantial increase, at least in part related to the popularity of aerosol packages. Eye makeup continued to increase sharply.

Food store and house-to-house sales continued to gain at the expense of drug, department, and specialty store sales.

Charles of the Ritz, Inc., Goes Public

Charles of the Ritz, Inc., is selling 215,000 shares of common stock, including 33,000 shares offered to employees. Richard Salomon owns these shares being offered for sale as well as 785,000 shares of Class B common stock; following the sale he will own 78.5 per cent of the company's outstanding stock and will continue to be in control of the company. As of March 6, 1961 the capitalization of the company consisted of 2,000,000 shares of common stock authorized, of which 215,000 will be outstanding; 1,000,000 shares of Class B common stock authorized, of which 785,000 are outstanding; and $7,661,200 of long term indebtedness. Net sales of Charles of the Ritz, Inc., and subsidiaries have been the following: 1951—$7,506,259; 1952—$8,108,760; 1953—$8,551,253; 1954—$9,387,115; 1955—$9,773,479; 1956—$10,883,236; 1957—$11,819,554; 1958—$12,064,429; 1959—$13,421,667; 1960—$14,441,184. Including Venus Pen & Pencil Corporation, acquired November 1, 1959, 1960 sales were $27,977,161.

Net income in these years was: 1951—$309,079; 1952—$358,382; 1953—$439,231; 1954—$622,898; 1955—$725,728; 1956—$742,719; 1957—$845,745; 1958—$887,299; 1959—$931,156; 1960—$1,130,768; including Venus, 1960—$1,417,673.

The name Charles of the Ritz was first used in 1926 in connection with beauty salons which had been operated since 1919 in the former Ritz Carlton Hotel and in several other hotels. In 1926 the business was expanded to include the manufacture and distribution to the retail trade of cosmetics and toilet preparations used in the beauty salons. The company acquired sole ownership of the Charles of the Ritz business in 1936. The cosmetic business of Alexandra de Markoff was acquired in 1949, of Anatole Robbins in 1959. Venus Pen & Pencil Corporation was acquired on November 1, 1959, at a cost of $7,474,325.

Look into the broad range of U.S.P., N.F. and T.G.A. products offered by:

Sonneborn White Oil Department

WHITE MINERAL OILS – High purity as indicated by the U.S.P. test for carbonizable substances and low ultraviolet absorbance, complete lack of odor, taste and color plus good shelf-life give Sonneborn white oils wide use in pharmaceutical and cosmetic preparations such as intestinal lubricants, ointments, baby oils, and many types of cosmetic creams, hair oils and makeup preparations.

PETROLATUMS – Purity, blandness, stability, smoothness and ductility of Sonneborn petrolatums make them ideal for use in a great variety of pharmaceutical ointments, protective creams, proprietary petroleum jellies and in hair preparations and other cosmetics. They are made in a complete range of properties to supply whatever color, melting point and consistency are desired.

PETROLEUM SPECIALTIES – Sonneborn manufactures three bases that are widely used by the cosmetic industry for such products as soapless shampoos, hand lotions, cleansing creams and hair dressings. They comprise: (1) A balanced blend of white mineral oils, petrolatum, and waxes that spread evenly and smoothly at body temperature; (2) A water-soluble combination of concentrated sulfonated oils fortified with a white mineral oil; (3) A water-miscible mineral oil that can be diluted to produce stable emulsions ranging in consistency from a gel to a milky liquid.

Witco Organic Chemicals Division

METALLIC STEARATES – Comprising the broadest line of metallic stearates in the U.S., these chemicals are used extensively to improve adhesion and water-repellency in powders and creams, to gel or emulsify creams and shampoos and to increase bulk and oil-absorption properties. All Witco stearates are manufactured according to T.G.A. standards.

EMCOL SURFACTANTS – Alkanolamine condensates for viscosity building and foam enhancement; flash foamers: quaternary ammonium compounds for use as detergent-germicides and conditioners; fatty acid amides for opacifying and hair conditioning.

FATTY ACID ESTERS – Emcol fatty acid esters include: glycerol and propylene glycol monostearates; diethylene glycol stearates, laurates and oleates; polyethylene glycol stearate, laurate and oleate. Used as emulsifiers, opacifiers, bodying agents and stabilizers.

WRITE FOR INFORMATION – Do you have a problem involving choice of components to obtain the selective properties you want in formulating cosmetics? Write today to Technical Service Dept. D-110. We will be glad to supply further information on any of the products listed.

SONNEBORN CHEMICAL AND REFINING CORP.
300 Park Avenue South, New York 10, New York

WITCO CHEMICAL COMPANY, INC.
122 East 42nd Street, New York 17, N.Y.

The company is primarily engaged in the manufacture and distribution of Charles of the Ritz cosmetics and toilet preparations for women, the line containing approximately 70 items. A principal product is Charles of the Ritz face powder, sold in solid or loose form individually blended for the customer at the retailer's counter through the use of specially designed equipment furnished and owned by the company. Creams and lotions include Revenescence Cream and Revenescence Lotion. Other products include the Special Formula Emollient, a cream introduced in 1955; Treatment Lipstick (1957); Disaster Cream (1958); Astringent Foundation (1959); Fresh Paint nail polish (1959); APD Ritz antiperspirant (1960). In January 1961 the company introduced a line of hair care preparations.

The company operates beauty salons in 21 selected department or specialty stores, hotels, and shopping centers in the United States and one in Paris, France. Since 1956, a subsidiary of the company has conducted a school of advanced hair fashions in conjunction with beauty salon operation.

Products are sold throughout the United States to carefully selected department and specialty stores on an exclusive or semi-exclusive basis, generally to only one account in a city, but to more than one in larger cities. Emphasis is on the distribution of quality products through a relatively small number of select retail outlets, direct contact with the retailer and considerable control over display and presentation of products. Salesgirls are specially trained either at the company training school or by travelling supervisors.

Charles of the Ritz products are advertised in *Vogue*, *Harper's Bazaar*, *The New Yorker*, *Glamour*, *Holiday*, *McCall's*, *Beauty Fashion*, and *Women's Wear Daily*, as well as in newspapers in cooperation with individual retailers.

The Alexandra de Markoff line accounted for about 3.6 per cent of total sales, or $490,000, in 1960.

In 1960, operations of the company, including Venus, contributed the following percentages of sales: pencils, pens and related products, 48.4 per cent; cosmetics and toilet preparations, 38.7 per cent; beauty salon and related school operations, 12.9 per cent. Corresponding contributions to profit were: pencils, pens and related products, 20.3 per cent; cosmetics and toilet preparations, 72.8 per cent; beauty salon and related school operations, 6.9 per cent.

Cosmetic and toilet preparations are sold directly to approximately 700 accounts operating about 1,000 selected department and specialty stores in the United States. Of the total domestic volume, no one account represents as much as 2 per cent and no one store as much as one per cent. Products are sold outside of the United States primarily in Canada, England, France, Argentina, Brazil, and the Union of South Africa. Sales outside the United States represented 6.4 per cent of the sales in 1960.

The company and its subsidiaries have approximately 1,900 employees, of whom approximately 1,150 are employed by Venus. Executive offices are located in New York City, and manufacturing, product development, warehousing, and shipping are conducted at a plant in South Norwalk, Connecticut with a floor space of about 70,000 square feet.

Officers and directors are: Richard Salomon, director and president; George Jablow, director and executive vice-president; Robert E. Curran, director, senior vice president and chairman of the executive committee; Maxwell F. Bower, director and vice president; Irving Beer, director, vice president, and treasurer; Otto J. Cohen, Louis Feeney, Marc See, and Ernest R. Sloan, vice presidents; Ralph Nierenberg, controller and secretary; Jervis J. Babb, Donald M. Elliman, Paul Hallingby, Jr., Sylvan Oestreicher, and Joseph Viertel, directors.

FTC, AMA, and Analgesics

The manufacturer of Anacin, American Home Products Corp., and of Bufferin, Bristol-Myers Co., have denied charges brought by the Federal Trade Commission that they misrepresented the speed with which these products relieve pain.

The separate complaints alleged that advertising falsely implies that Anacin will relieve pain faster than any other analgesic available and offered for sale to consumers, and Bufferin relieves pain twice as fast as aspirin.

The complaint charged that there is actually no significant difference in the rate of speed with which these or any other such analgesics relieve pain. The FTC further charged that American Home falsely advertised that Anacin relaxes tension and helps overcome depression.

Each company denies that its advertising is false and requests dismissal of the complaint against itself. American Home filed a categorical denial and Bristol-Myers declares the "claim in its advertising that Bufferin works twice as fast as aspirin for millions of people has been continuously known to the Commission since at least January of 1949, and that until March 14, 1961, it did not appear to the Commission that a proceeding by it in respect thereof would be in the public interest."

Meanwhile, the American Medical Association publication *Today's Health* helpfully points out that Americans may be wasting money by buying fancy, high-priced aspiring preparations instead of plain aspirin. In 1959, according to the article, $69.0 million was spent for plain aspirin, but $213.0 million was spent for other aspirin preparations. "One of the most popular of these are the so-called buffered aspirin which sell for almost twice as much as the most expensive plain aspirin. Buffered aspirins are no more than plain aspirin plus a pinch or two of antacid salts.

"The fizzing headache cures which are vastly more expensive are essentially buffered aspirin, with some citric acid added to make bubbles."

The article cited several scientific studies that indicated the antacids in buffered aspirin serve no use-

ful purpose.

Another popular aspirin preparation, aspirinphenacetin-caffeine (APC) sells for about double the price of the most expensive plain aspirin, the article pointed out. "Phenacetin parallels aspirin's pain-relieving powers, while the caffeine is designed to exert a mild central stimulating effect. Actually, APC is just as effective as aspirin. At the same time, phenacetin is more toxic than aspirin."

Eyebrow Pencils Recalled

The major manufacturer of eyebrow pencils for the cosmetic industry has notified its customers to withdraw immediately all shades which contain non-permitted coal-tar colors and has removed the colors from its plant, according to the Food and Drug Administration.

Jensen's Inc., of Shelbyville, Tenn., notified FDA of the action. Several cosmetic companies have already recalled outstanding stocks of eye make-up containing non-permitted colors and FDA is seizing lots not recalled.

Synthetic organic colors were ruled out for use in eye make-up by regulations under the 1938 Federal Food, Drug, and Cosmetic Act and the 1960 Color Additives Amendments because such colors have not been shown safe for use in the area of the eye.

The telegram from Axel Jensen, president of Jensen's Inc., to Commissioner of Food and Drugs George P. Larrick reads as follows:

"Wish to advise that on Friday, April 22, 1961, we notified our customers to withdraw immediately from the trade channels all shades of eyebrow and eyeliner crayons which are not permitted under the regulations of the Food and Drug Administration, to place them in sealed containers, not to ship them to any person, company or corporation and await further advice as to disposition.

"We have completely removed all non-permissable colors from our plant and all eyebrow and eyeliner crayons shipped after April 5, 1961, are in complete compliance with the regulations. We will cooperate in correcting this problem as quickly as possible but wish to assure you that every effort is being made at our plant to remove any possibilities of a recurrence of this situation."

The action was started by the FDA seizure of Hazel Bishop and Anita d'Foged eye make-up and followed by seizure action against Avon Eye Line Violet. Non-permitted colors have been found in Revlon, Maybelline, Max Factor, Cosmetically Yours, and Helena Rubinstein eye pencils. Several of the firms have voluntarily recalled and destroyed outstanding stocks of the products, and others recalling shades of eye pencils found to contain non-permitted colors are House of Westmore, Yardley of London, and Theon Co. Additional seizures were reported to be in progress against products of P. H. Kreuger, Lander Co., Aversa Martin, and Connecticut Pencil Co.

Colors involved are frosted blue, blue, green, light brown, dark brown, red, yellow, amethyst blue, lilac, and violet.

S. L. Mayham, Executive Vice-President of the Toilet Goods Association, noted that this incident serves to emphasize more strongly than ever the absolute necessity for adequate control of products sold, whether made by the distributing company or by a private label manufacturer. Selling a product that might be harmful or is not manufactured in accordance with government regulations will damage the fine reputation of the entire cosmetic industry.

Drug Industry Research

The Pharmaceutical Manufacturers Association survey of drug industry personnel engaged in research and development in 1960 showed that the 89 companies responding to the questionnaire reported 12,900 persons engaged in research and development, with total expenditures estimated at $215 million. Of the total of 7,200 scientific staff, 30 per cent were engaged in chemistry, 33 per cent in microbiology, pharmacology and biochemistry, 9 per cent in pharmacy and pharmaceutical chemistry, and 7 per cent in clinical sciences. Fifty six of the companies indicated that they would need about 600 additional scientists in 1961, with smaller companies looking for a proportionately larger increase than large organizations.

FTC Complaints

An FTC hearing examiner issued an order to require *Spencer Gifts, Inc.*, a mail-order distributor of Atlantic City, N. J., to stop misrepresenting colognes as perfumes. The order is not a final decision and may be appealed, stayed or docketed for review. The examiner found that the concern's advertising for Arpege and Chanel No. 5 colognes falsely represented that the products offered were the perfumes of the same names. Although the company did not use the word "perfume" in its advertising, it did use the brand names without disclosing that the products offered were colognes. The examiner also pointed out that the colognes were rebottled in the one dram size by someone other than the manufacturers.

The Federal Trade Commission charged in a formal complaint that Forrest I. and Alberta L. Brodie of Louisville, Ky., have made false hair-growing and baldness-prevention claims for the hair and scalp preparations they sell; the respondents are granted 30 days in which to file answer to the complaint. They trade as *Brocress Laboratories*, *Leslie Hair and Scalp Consultants*, and *Lesley Hair and Scalp Specialists* and the complaint alleges that their advertising misrepresents that the preparations will prevent and overcome baldness or excessive hair loss and induce hair to grow and make it thicker, in almost every case except for completely bald persons. The truth is, the complaint says, the great majority of cases of baldness and excessive hair loss is the common type known as male pattern baldness, and for this type the partners' preparations are of no value whatever. The advertisements are further mislead-

ing in that they do not reveal these material facts, thus falsely suggesting there is a reasonable probability that the preparations may be beneficial in any particular case.

Drug Counterfeiting Survey

The Food and Drug Administration has released the results of its nation-wide investigation of drug counterfeiting. Almost 2,700 samples were collected from 900 drug stores selected at random between January 24 and March 30, 1961. Of these samples, 9 samples from 9 stores were found to be counterfeit. Selected coverage of suspected retailers, still in progress, has revealed that 59 out of 1,020 samples, or 5.8 per cent, were counterfeit. In addition, a special random survey of Washington, D. C., drug stores gave them a clean bill of health; 293 samples from 100 stores were all authentic.

Analyses of 91 counterfeit drug samples showed that 14 were slightly below generally required standards of potency and two were substantially below standard.

Commissioner of Foods and Drugs George P. Larrick commented: "It has been and still is our view that the facts to date do not warrant disturbing sick people about the quality of the medications they have been taking. The survey results support this conclusion and indicate that the vast majority of our drugs are authentic. Still, the origin of counterfeits and the possibility that they have not been properly manufactured leaves us no room for apathy or complacency."

First Quarter 1961 Finances

Abbott Laboratories sales in the first quarter of 1961 were $34.0 million, compared with $36.3 million in the corresponding period of 1960, a decline of 6.2 per cent, while earnings dropped by 21.9 per cent from $4.5 million to $3.5 million. In domestic markets, lower antibiotic prices and intensified vitamin competition were factors in the decline.

Baxter Laboratories, Inc., sales for the first three months of 1961 were $9.3 million, 7.4 per cent greater than the $8.6 million in the preceding year, but net earnings in the corresponding periods were $531,000, 13.4 per cent lower than the previous $614,000.

Chemway Corporation net income in the first quarter of 1961 was $20,306, or 46.4 per cent less than the $37,785 earned in the first three months of 1960. Sales in the corresponding periods were $1.8 million in 1961 and $1.9 million in 1960, a decline of 7 per cent.

Johnson & Johnson consolidated domestic sales for the first quarter of 1961 were $79.8 million, an increase of 0.6 per cent over the $79.3 reported for the first quarter of 1960. Corresponding earnings were $3.6 million, a decline of 14 per cent from $4.2 million. Consolidated foreign net earnings were $802,000 in the first quarter of 1961 after provision of $170,000 for exchange conversion loss, compared with $1,197,000 in the same period of 1960. Foreign sales were 10 per cent in 1961.

Mead Johnson & Company first quarter 1961 sales were $35.6 million, compared with $22.0 million in the same period of 1960, while per share net earnings increased from $1.22 to $1.83.

Merck & Co. consolidated net sales for the first three months of 1961 were $55.0 million, compared with $55.8 million, a decline of 1.4 per cent, while net income declined 17 per cent to $6.2 million, compared to $7.4 million.

Miles Laboratories, Inc., net sales for the first quarter of 1961 were $23.2 million, 12 per cent greater than the $20.7 million for the corresponding quarter of 1960. Earnings amounted to $1,131,000 for the quarter, compared with $865,000 for 1960, an increase of 30.8 per cent.

Norwich Pharmacal Company in the first quarter of 1961 reported net sales of $11.1 million and net income of $1.6 million, increases of 3.5 per cent and 17.3 per cent, respectively, over sales of $10.7 million and income of $1.3 million in the first quarter of 1960.

Parke, Davis & Company 1961 first quarter sales were $47.5 million and earnings $5.8 million, compared with comparable 1960 figures of $53.4 million in sales. Sales of chloromycetin were less than in the 1960 quarter but are still at the rate of $78.0 to $80.0 million a year.

Chas. Pfizer & Co., Inc., reported a first quarter gain of 5 per cent in both sales and earnings. Sales were $72.2 million, compared with $68.7 million, while earnings were $7.5 million and $7.5 million.

Plough, Inc., net sales for the first quarter were $11.0 million in 1961 and $9.5 million in 1960 while comparable net income was $700,000 and $690,000.

Revlon, Inc., net sales for the first quarter of 1961 were $33.0 million, 10.1 per cent higher than the $29.9 million in 1960; net income was $2.7 million, 2.2 per cent greater than the $2.5 million in the preceding year.

Shulton, Inc., net sales in the first quarter of 1961 were $8.9 million, 18 per cent greater than the $7.6 million in 1960. Corresponding earnings were $435,000 and $340,000, an increase of 28.1 per cent.

Smith Kline & French Laboratories net sales in the first three months of 1961 were $37.7 million, 5.5 per cent greater than the $35.8 million in the corresponding period of 1960. Net earnings were $6.7 million and $5.9 million, an increase of 14 per cent.

Sterling Drug Inc. sales in the first quarter of 1961 were $58.4 million, 0.2 per cent less than the $58.5 million in the previous year, while net profit increased by 1.6 per cent to $6.2 million, compared with $6.0 million.

Warner-Lambert Pharmaceutical Company for the first quarter of 1961 earned $3.6 million on sales of $48.1 million, compared with earnings of $4.0 million on sales of $50.4 million for the first quarter of 1960. •

BACITRACIN

Effective! Economical!

Nonallergenic!

Study the spectrum chart. It compares three major antibiotics. It shows that the range of effectiveness of bacitracin (both as standard and as zinc bacitracin), in most cases, is unsurpassed and CSC Bacitracin is economical, too.

CSC Bacitracin offers other advantages. Being nonallergenic and nonirritating, patients do not develop sensitivity to it, even after prolonged or repeated use. Bacteria do not readily develop resistance to bacitracin. Bacitracin is not absorbed. Because of these qualities CSC Bacitracin is ideal for topical, oral, and local application.

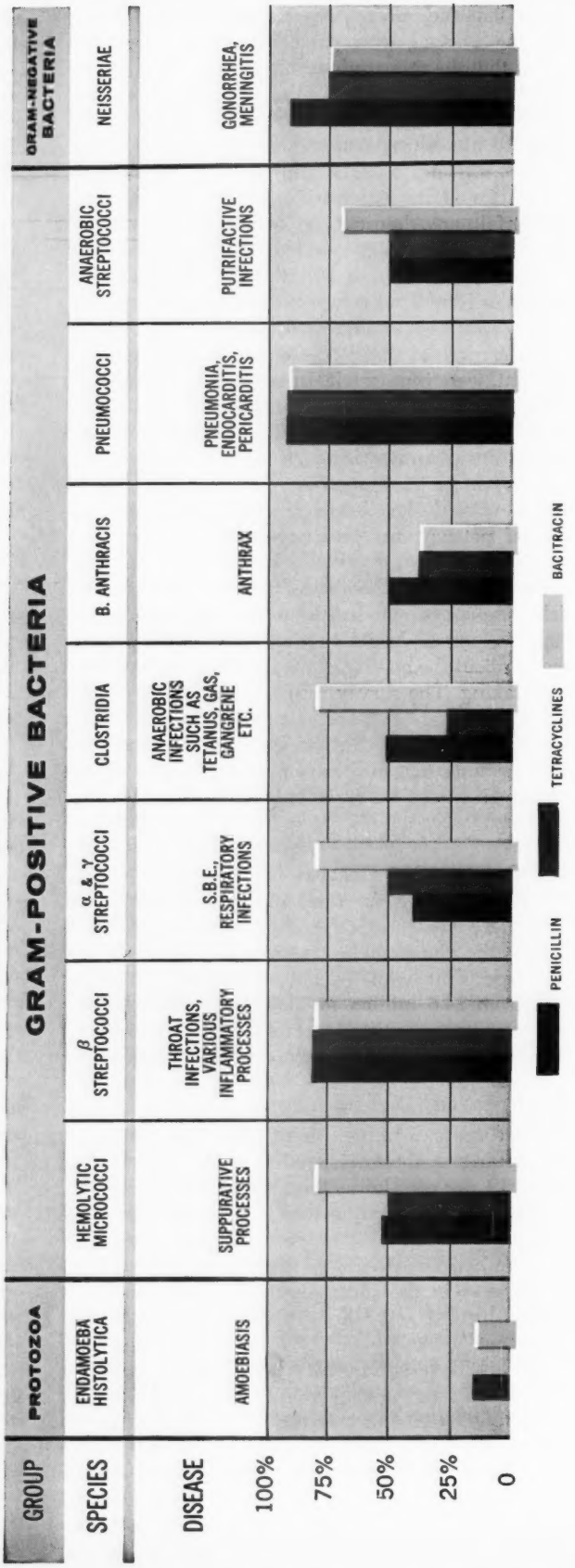
Bacitracin is synergistic with virtually all major antibiotics. Specifically, it is selectively effective against all staphylococcal infections, especially where other antibiotics have failed. Bacitracin should be the drug of choice in so-called "hospital-acquired" staphylococcal infections.

Commercial Solvents manufactures both standard and zinc bacitracin, micronized to your specifications, and sterile for systemic use. Contact us for help with your formulations, or for further data and samples.

Pharmaceutical Chemicals Section

COMMERCIAL SOLVENTS CORPORATION

260 Madison Avenue, New York 16, New York



COMING EVENTS . . . . .

MAY

15 **Packaging Industry Technical Conference** of the American Institute of Electrical Engineers, New Ocean House, Swampscott, Mass.

15-17 **Chemical Specialties Manufacturers Assn.**, annual meeting, Hotel Drake, Chicago. (C.S.M.A., 50 E. 41st St., N. Y. C. 17)

17 **American Society of Perfumers**, closed meeting, Advertising Club, 35th St. & Park Ave., N. Y. C. (A.S.P., 630 Fifth Ave., N. Y. C. 20)

22-24 **Synthetic Organic Chemical Manufacturers Association**, Spring outing, Skytop Lodge, Skytop, Pa.

22-25 **American Society of Design Engineers**, Design Engineering Show, Cobo Hall, Detroit, Mich. (Clapp & Poliak, Inc., 341 Madison Ave., N. Y. C. 17)

22-26 **American Society of Tool and Manufacturing Engineers**, Engineering Conference and Tool Show, New York City Coliseum.

24 **Packaging Institute**, joint meetings with Institute of Food Technologists, Hotel Syracuse, Syracuse, N. Y.

JUNE

4-7 **Annual National Industrial Pharmaceutical Research Conference**, King's Gateway, Land O' Lakes, Wisconsin, Extension Services in Pharmacy, University of Wisconsin (Richard S. Strommen, E.S.P., 301 Chemistry Bldg., University of Wisconsin, Madison, Wisc.)

5-9 **Society of Plastics Industry**, National Plastics Exposition and annual national conference, Coliseum and Hotel Commodore, N. Y. C. (S.P.I., 250 Park Ave., N. Y. C. 17)

6-8 **Instrument Society of America**, conference and exhibit, Toronto, Canada.

8-10 **Manufacturing Chemists' Assn.**, annual meeting, Greenbrier Hotel, White Sulphur Springs, W. Va.

9-17 **Achema, International Chemical Engineering Exposition and Congress**, including the annual meetings of the **Dechema Society** and the **Isotopen-Studiengesellschaft**, Frankfurt am Main, Germany (Chicago Section, A.C.S., 86 East Randolph St., Chicago 1, Ill.)

12-16 **Gordon Research Conference**, Lipide Metabolism, Kimball Union Academy, Meriden, N. H. (Dr. W. George Parks, University of Rhode Island, Kingston, R. I.)

12-29 **Rochester Institute of Technology**, annual statistical quality control intensive courses for the chemical and processing industries, staff from American Society of Quality Control, Chemical Division, Rochester, N. Y. (Harold M. Kentner, Director, Extended Services, Rochester Institute of Technology, Rochester 8, N. Y.)

13 **Society of Cosmetic Chemists**, Chicago Chapter meeting, (S.C.C., 2 E. 63rd St., N. Y. C. 21)

14 **Society of Plastics Engineers**, Plastics in Packaging, Quebec Section, Montreal, Quebec, Canada

15 **Synthetic Organic Chemical Manufacturer's Assn.**, luncheon meeting, Hotel Roosevelt, N. Y. C.

15-16 **Drug and Allied Products Guild**, annual meeting, Concord, Kiamesha Lake, N. Y.

15-16 **American Chemical Society**, National Colloid Symposium, Univ. of Rochester, Rochester, N. Y. (A.C.S., 1155 Sixteenth St., N. W. Washington 6, D. C.)

18-24 **Pharmaceutical Advertising Club** advanced seminar for pharmaceutical marketing executives, Howard Graduate School of Business Administration, Cambridge, Mass. (P.A.C., 489 Fifth Ave., N. Y.)

19-21 **American Society of Pharmacognosy**, annual meeting, University of Houston, College of Pharmacy, Houston, Texas (Roll S. Westly, Eli Lilly & Co., 740 South Alabama St., Indianapolis 6, Ind.)

19-23 **Gordon Research Conference**, Cell Structure and Metabolism, Kimball Union Academy, Meriden, N. H. (See above.)

22-25 **American Therapeutic Society**, Essex House, N. Y. C.

23 **Parenteral Drug Assn.**, scientific meeting (afternoon and evening), Warwick Hotel, Philadelphia, Penna. (P.D.A. 1420 Snyder Ave., Philadelphia 45, Penna.)

25-30 **American Medical Assn.**, Exposition, New York City Coliseum, annual meeting, N. Y. C.

26-30 **American Medical Assn.**, annual meeting, Statler-Hilton Hotel, New York City.

27 **Pharmaceutical Advertising Club**, joint meeting with the Midwest P.A.C., Hotel Plaza, N. Y. C. (P.A.C., 489 Fifth Ave., N. Y. C.)

27-29 **Society for Investigative Dermatology**, N. Y. C.

28 **Symposium on the Problem of the Aging Skin** (2 p.m.), sponsored by the Committee on Cosmetics, A.M.A., Henry Hudson Hotel, N. Y. C. (Committee on Cosmetics, A.M.A., 535 North Dearborn St., Chicago 10, Ill.)

JULY

3-7 **Gordon Research Conference**, Vitamins and Metabolism, Kimball Union Academy, Meriden, N. H. (See above.)

10-14 **Gordon Research Conference**, Chemistry, Physiology and Structure of Bones and Teeth, Kimball Union Academy, Meriden, N. H. (See above.)

10-21 **Philadelphia College of Pharmacy and Science**, postgraduate course in the preparation of parenteral products, under the direction of Dr. Kenneth E. Avis, Associate Professor of Pharmacy. (Registrar, Philadelphia College of Pharmacy and Science, 43rd St., Kingsessing and Woodland Avenues, Phila. 4, Pa.)

17-21 **Gordon Research Conference**, Microbiological Deterioration, Tilton School, Tilton, N. H. (See above.)

31 **Gordon Research Conference**, Medicinal Chemistry, through Aug. 4, Colby Junior College, New London, N. H. Steroids and Other Natural Products, New Hampton School, New Hampton, N. H. (See above.)

AUGUST

7-11 **Gordon Research Conference**, Toxicology and Safety Evaluations, Kimball Union Academy, Meriden, N. H. (See above.)

10-16 **International Congress of Biochemistry**, Moscow, U.S.S.R. (N. W. Sissakian, Leninsky prospekt 33, Moscow, B-71, U.S.S.R.)

14-18 **Canisius College Fifth Annual Infrared Spectroscopy Institute**, Buffalo, N. Y.

20-24 **American Veterinary Medical Assn.**, annual convention, Sheraton Cadillac Hotel, Detroit, Mich.

21-25 **Gordon Research Conference**, Food and Nutrition, Colby Junior College, New London, N. H. (See above.)

22-25 **International Pharmacological Meeting** (first), Stockholm, Sweden

28 **Gordon Research Conference**, Cancer, Colby Junior College, New London, N. H. (See above.) ●

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DRUG AND COSMETIC OPERATIONS 1960

BY JOSEPH KALISH, Ph.D.

Again we present our compilation of data provided in financial reports issued by publicly owned companies in the fields of drugs and cosmetics. A number of companies with important drug or cosmetic operations do not separate these from chemical or other business and these are tabulated in the first table. Wherever the financial statement provides the basis for reporting purely drug or cosmetic business, this is given in the proper table. Pharmaceutical figures combine ethical and proprietary sales.

Abbott Laboratories Scientific Division, including control scientists and technicians, now numbers 800 persons. Research costs were $8.2 million in 1960 and are expected to surpass $9.0 million in 1961.

Avon Products, Inc., primary product line is cosmetics and toiletries for women, but during the past few years the men's, teen-age, and children's lines have grown in stature. These lines have been receiving increasing merchandising, sales promotion, and advertising support and have been making greater contributions to sales.

Bourjois, Inc., net sales for the fiscal year ended April 30, 1960 were 10.6 per cent greater than in the previous year, the increase in net income was 9.6 per cent. Helene Pessl, Inc., was acquired for cash in January, 1960.

Bristol-Myers Company sales in 1960 of $146.7 million were divided among proprietary preparations 76.0 per cent, prescription drug preparations 22.0 per cent, and all others 2.0 per cent. In 1959 the proportions were 76.4 per cent proprietaries, 21.0 per cent prescription drugs, and 2.6 per cent all others. Research expense in 1960 exceeded $6.5 million.

Chemway Corporation acquired The Iso-Sol Company, Inc., for 38,000 shares of Chemway stock, and Contactisol, Inc., for $114,000, during 1960.

Lady Esther sales and earnings declined, while Crookes-Barnes showed an increase in sales but a decline in profits. Dunbar Laboratories continued market evaluation of a number of new products; international operations were the most profitable.

Chesebrough-Pond's Inc. made good progress in 1960 in most domestic operations. Sales of Pertussin Cough Syrup increased by 25 per cent over 1959 sales, Pond's Angel Face Makeup sales increased 8 per cent, while sales of the Prince Matchabelli line rose 13 per cent, with a high profit margin. Sales of Vaseline brand products remained at approximately the same level as the previous year, while volume of

PHARMACEUTICALS, COSMETICS, CHEMICALS, ETC.
(In Thousands of Dollars)

	1960				1959			
	Net Sales	Cost of Goods	Sell., Adm. Gen. Exp.	Net Income	Net Sales	Cost of Goods	Sell., Adm. Gen. Exp.	Net Income
Procter & Gamble Co. (June 30)	1,441,548	891,276	354,290	98,078	1,368,532	864,228	337,768	81,698
Olin Mathieson Chem. Corp.	689,623	466,570	119,882	34,669	702,032	476,852	111,845	37,416
American Cyanamid Co.	578,390	285,592	159,403	46,821	583,575	288,190	147,310	52,284
Colgate-Palmolive Co.	576,326	308,718	223,644	21,183	581,982	310,381	217,130	25,287
American Home Products Corp.	450,767	167,707	180,020	48,575	423,479	157,149	165,391	46,662
Lever Brothers Co.	388,600	———302,000———		11,400	409,600	———302,400———		15,200
Johnson & Johnson	386,624	226,422	114,515	18,728	370,909	216,772	107,948	18,548
Chas. Pfizer & Co., Inc.	269,376	126,856	103,111	26,183	253,673	125,119	95,502	24,863
Rexall Drug and Chem. Co.	242,557	148,427	70,769	9,360	227,016	137,592	67,160	8,753
Sterling Drug Inc.	218,526	86,413	88,101	22,214	209,248	86,042	81,988	20,990
Merck & Co., Inc.	218,143	89,619	83,630	27,813	216,913	89,235	79,530	29,988
Warner-Lambert Pharm. Co.	197,884	68,055	89,883	16,517	190,660	66,872	84,760	16,409
Bristol-Myers Co.	146,716	37,601	89,813	10,768	131,544	33,526	82,597	8,889
Richardson-Merrell Inc. (June 30)	132,288	59,661	44,775	14,381	115,228	54,620	37,377	12,157
Miles Laboratories, Inc.	82,384	———70,427———		4,220	72,189	———60,865———		4,398
Plough, Inc.	45,918	———	———	3,154	34,022	———	———	2,657
Lehn & Fink Prod. Corp. (June 30)	34,421	———30,792———		1,466	32,371	———29,048———		1,317
Chemway Corp.	8,665	3,221	5,122	159	8,820	3,092	4,933	435

COSMETICS
(In Thousands of Dollars)

	1960			1959			
	Net Sales	Cost of Goods	Sell., Adm. Gen. Exp.	Net Income	Net Sales	Cost of Goods	Sell., Adm. Gen. Exp.	Net Income
Avon Products, Inc.	168,188	62,226	68,072	17,619	141,905	52,095	59,175	14,395
Revlon, Inc.	136,373	54,292	60,062	11,321	124,940	50,331	52,995	10,837
Chesebrough-Ponds, Inc.	70,177	25,910	35,999	4,517	66,314	25,383	33,866	4,030
Max Factor, Inc.	59,238	———	50,925 ———	4,024	53,229	———	45,738 ———	3,725
Shulton, Inc.	50,064	———	43,071 ———	3,433	43,707	———	36,169 ———	3,754
Helene Curtis, Inc. (Feb. 28)	48,059	———	———	2,490	47,295	———	———	1,805
Warner-Lambert Pharm. Co.	35,979	———	———	———	37,650	———	———	———
Helena Rubinstein, Inc. (June 30)	31,101	———	27,726 ———	1,705	27,230	———	24,087 ———	1,425
Coty, Inc. (June 30)	25,201	9,830	15,053	295	22,679	9,361	13,244	103
Lanolin Plus, Inc. (June 30)	13,401	6,186	6,171	49	12,297	5,353	5,485	479
Bourjois, Inc. (Apr. 30)	———	———	3,259	523	———	———	2,913	477

international business was higher, with slightly lower earnings. At the close of the year, the company acquired Northam Warren, which will be continued as a separate operation.

Colgate-Palmolive Company international operations again resulted in new sales and earnings records, international sales being $301.2 million in 1960, while earnings were $16.2 million. Domestic sales decreased to $275.1 million in 1960, compared with $285.5 million 1959, while earnings of $5.1 million in 1960 compared with $9.2 million in 1959. Construction was begun on the research center adjacent to the Science Campus of Rutgers University, and new products introduced in 1960 included a new formula Vel Liquid Detergent, pink Palmolive Soap, a dry-hair formula Halo Shampoo, roll-on Veto deodorant, and unscented Florient Air Deodorant. The Pharmaceutical Laboratories Division made progress in organizing its proprietary drug activities; Lakeside operations were adversely affected by withdrawal of one principal product and discontinuance of another.

The decline in domestic results is due primarily to lower sales and earnings in the Toilet Articles Division.

Max Factor & Co. during 1960 substantially completed work on the installation of new and enlarged compounding facilities and related packaging equipment for the production of creams, lotions, lipsticks, and makeup requisites at the new Hawthorne, California manufacturing plant. New product and merchandising innovations introduced throughout the year were well received. These included a line of fashion accessory Creme Puff Compacts and lipstick cases and a complete makeup in liquid form.

Eli Lilly and Company research and development expenses in 1960 were $19.7 million, compared with $18.3 million in the preceding year. Factors which influenced the 1960 sales picture unfavorably included substantial reductions in retailer inventories, price reductions on 40 major drug items, and continued decline in public demand for polio vaccine.

Merck & Co., Inc., international sales were $61.0 million in 1960 compared with $63.0 million in 1959. Research expenditures for 1960 were $21.0 million. Diuretics, steroid hormones and vitamins accounted for 59 per cent of total company sales.

Miles Laboratories, Inc., home products sales accounted for 79 per cent of sales or $65.1 million, pharmaceuticals for 15 per cent or $12.4 million, and chemicals for 6 per cent or $4.9 million in 1960. The 1959 distribution was home products 84 per cent, pharmaceuticals 11 per cent, and chemicals 5 per cent. The new citric acid plant in Mexico is nearly completed, and ground has been broken for the Israel plant.

Olin Mathieson Chemical Corporation, Squibb Division sales increased somewhat over the previous year. Heavier expenditures for research, additional sales expenses, and declining levels for antibiotics and vitamin products resulted in slightly lower profits. A new $2.3-million packaging facility at New Brunswick, N. J., was completed in 1960, and expenditures for research were the highest in Squibb's history.

Chas. Pfizer & Co., Inc., capital investment in research and development facilities in this country and abroad now exceeds $17 million. More than $80 million has been spent on research in the past decade, and in 1960 expenditures totaled $13.4 million. With the addition of new plants, Pfizer products will soon be manufactured in 24 countries overseas, and Pfizer products are being sold in more than 100 countries.

Procter & Gamble Company toilet goods business participated in the increased sales volume. Crest toothpaste benefitted from ADA recognition and additional volume resulted from shampoos and home permanents. A new deodorant was introduced nationally during the year.

Revlon, Inc., higher sales in 1960 reflected advances in product research, quality control, and customer service. More than 110 chemists and technicians now participate in research and staff, and facilities for quality control have been expanded. The Ultima line

was successfully presented during the year, lipstick and nail enamel sales continued to increase, the eye makeup market is expected to expand, sales of colognes achieved new highs, and a roll-on deodorant containing neomycin was introduced.

Richardson-Merrell Inc., formerly Vick Chemical Company, research expenditures for 1960 equalled $4.8 million. Sales of the ethical and veterinary drug divisions were $56.6 million, 16.7 per cent greater than in the preceding year; proprietary drugs totaled $59.4 million, an increase of 17.2 per cent; fine chemicals and plastic container sales reached $16.3 million, an increase of 10.2 per cent; international sales amounted to $27.6 million, 9.5 per cent greater than in the year before, and consisted mainly of proprietary and ethical drug sales.

Shulton, Inc., domestic sales of the Toiletries Division for the first eight months were 15 per cent ahead of the preceding year, but the general business slowdown and unexpected production difficulties kept final sales volume below the anticipated figure. Consumer chemicals, in the Home Products Division, grew substantially in volume, while specialty chemical sales increased in physical volume but were kept at the same dollar volume because of price competition. International sales increased by 34.4 per cent.

Sterling Drug, Inc., consolidated sales in 1960 were $218.5 million, but total net sales, including those of nonconsolidated units, were $242.6 million. These sales included proprietary products valued at $115.2 million and pharmaceutical specialties at $82.1 million. The total of $197.4 million compares with $180.7 in the preceding year, while industrial and other consumer products declined from 1959 to 1960. Bayer Aspirin showed the greatest rate of growth of all analgesic products in the United States in 1960.

U. S. Vitamin & Pharmaceutical Corporation has budgeted research expenditures in 1961 at a new high of approximately 7.5 per cent of sales.

The Upjohn Company consolidated sales in 1960 of $159.4 million were distributed among antibiotics, 19 per cent or $30.3 million, nutritional products 14 per cent or $22.3 million, steroid hormones 28 per cent or $44.6 million, other pharmaceutical products 32 per cent or $51.0 million, and veterinary, agricultural and bulk chemical sales 7 per cent or $11.2 million. Orinase showed a substantial increase during 1960 over the previous year; the number of diabetic patients in the United States being maintained on this drug was estimated at 650,000. Expenses for research and development in 1960 increased by about 6 per cent to 10.1 per cent of sales or $16.1 million.

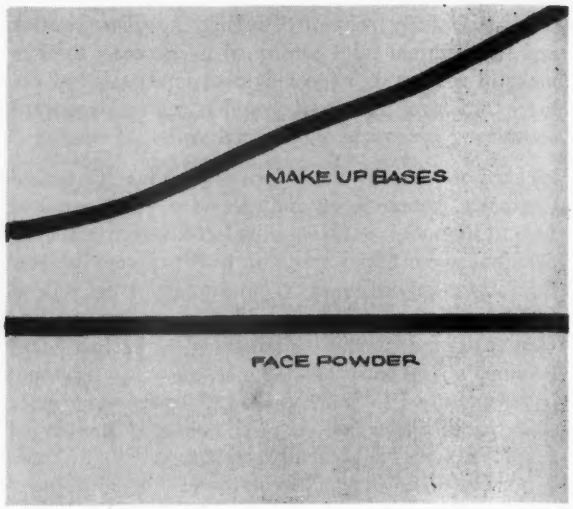
Warner-Lambert Pharmaceutical Company 1960 domestic sales of $143.2 million were divided among ethical pharmaceuticals and medicinal chemicals 26.6 per cent or $38.1 million, proprietary pharmaceuticals 34.3 per cent or $49.1 million, sundries 12.5 per cent or $17.9 million, toiletries and cosmetics 12.9 per cent or $18.5 million, plastics and glass containers 13.7 per cent or $19.6 million. Foreign volume amounted to $54.7 million and consisted of $35.6 million or 65 per cent pharmaceuticals, $17.5 million or 32 per cent toiletries and cosmetics, and $1.6 million or 3 per cent sundries.

Sales of Richard Hudnut hair preparations and toiletries declined substantially in 1960, with adverse effect on earnings, as a result of marketing problems encountered in certain new product introductions; sales of Du Barry cosmetics and fragrances showed a substantial gain •

PHARMACEUTICALS
(In Thousands of Dollars)

	1960				1959			
	Net Sales	Cost of Goods	Sell., Adm. Gen. Exp.	Net Income	Net Sales	Cost of Goods	Sell., Adm. Gen. Exp.	Net Income
American Home Products Corp.	326,400	———	———	———	306,700	———	———	———
Parke, Davis and Co.	200,003	69,914	79,823	30,470	191,527	60,971	70,163	30,961
Sterling Drug, Inc.	197,356	———	———	———	180,735	———	———	———
Eli Lilly and Company	178,548	———141,701———		18,752	187,010	———141,239———		23,446
Upjohn Company	159,430	40,076	76,199	22,768	156,914	40,215	69,728	23,224
Smith Kline & French Labs.	144,538	39,736	54,419	24,025	134,891	37,007	47,325	25,006
Bristol-Myers Co.	143,782	———	———	———	128,124	———	———	———
Merck & Co.	128,700	———	———	———	132,300	———	———	———
Abbott Laboratories	125,968	51,652	49,997	12,385	122,602	49,697	46,556	12,989
Warner-Lambert Pharm. Co.	122,754	———	———	———	114,443	———	———	———
Richardson-Merrell Inc. (June 30)	116,000	———	———	———	98,900	———	———	———
Mead Johnson & Co.	111,258	42,761	40,791	13,316	59,667	24,668	26,173	5,501
Olin Mathieson Chem. Corp.	109,100	———	———	———	106,600	———	———	———
Schering Corp.	82,840	18,675	51,018	9,865	80,558	17,469	46,500	11,864
Miles Laboratories	77,441	———	———	———	68,580	———	———	———
Norwich Pharmacal Co.	45,165	9,979	22,929	5,951	40,669	8,802	20,869	5,148
G. D. Searle & Co.	36,907	12,401	9,247	7,457	34,509	10,762	8,854	7,298
Baxter Laboratories, Inc.	33,775	———	———	2,142	29,154	———	———	1,835
Cutter Laboratories	23,034	13,492	8,349	537	21,315	11,601	7,736	979
U. S. Vitamin & Pharm. Corp.	14,919	4,776	6,792	2,093	14,866	5,104	6,455	1,978
Wm. H. Rorer, Inc.	11,395	2,262	5,251	1,833	9,025	2,023	4,174	1,315

Continuing the analysis initiated in Part I of this special report, we look at another group of products. Some, as before, have exhibited spectacular growth, while others, for a number of reasons, have only expanded with the population.



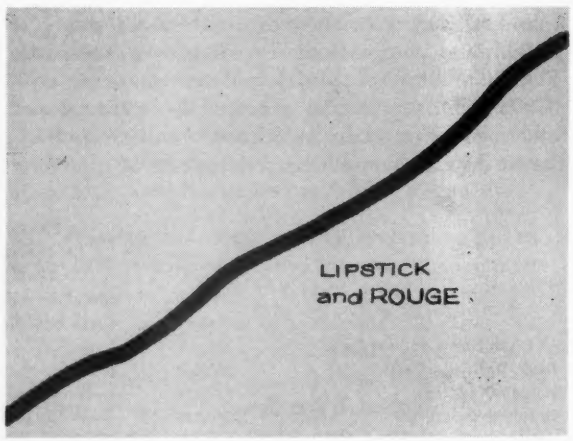
PERFUMES AND COSMETICS

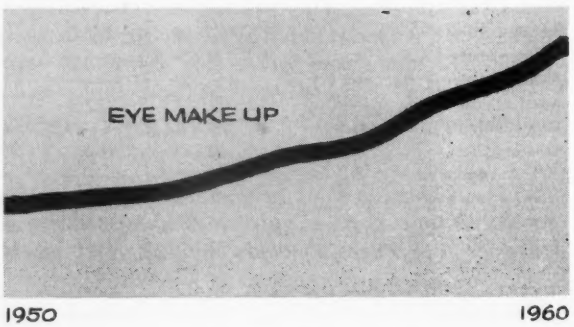
Today's Potentials: 2

In recent years, women have been seeking, in making up, what has been called a more "natural" look, and the industry has provided products to help achieve that result. The development has been from the cake makeup—which could result in a heavily made-up look—through the emulsified forms, to the liquid, which is becoming increasingly popular today. It is the latter that more nearly satisfies women's needs and desires and gives most successful results in achieving the natural look.

In the generally accepted regimen today, a woman begins making up, after cleansing naturally, by applying a moisturizer. This is followed by the application of a liquid foundation, which may or may not have color. The finishing touch is powder, usually looose, which may be colored or colorless depending on whether a colored foundation has been used. Some women simply apply powder over a moisturizer or lubricant, but most consider a foundation necessary in making up satisfactorily. To touch up during the day, women use pressed powder or in some instances a pressed powder-foundation combination.

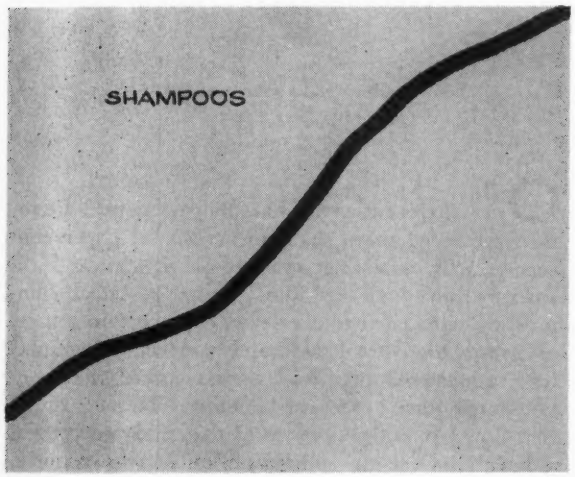
However, in spite of a product that seems to be effective and satisfactory in performance, figures from the independent surveys we consulted show that only 26 per cent of women use a foundation product, accounting for manufacturers' sales of $11 million for foundation creams and $20 million for liquid and cake makeup. This varies from 12 per cent at age 15





to around 21 per cent at the age of 55 years. It would seem that the industry has failed, in its job of education and promotion, to extend the use of this product, particularly to the newly developed teen-age and older women markets.

Growth can be expected in the liquid foundations, especially as the product is improved and developed further. One direction is the development of new liquids in special types for day and evening wear. Another direction is the inclusion of pearlizing tones and color tones—purples, blues, greens—to give the skin a certain hue and prevent change of color during use. The teen-age and lower-priced market, the group among which it is used most extensively today, can be further encouraged to use the pressed foundation, and these users can also be educated to the use of the liquid foundations with powder.



Face Powder

Closely allied with the development of liquid foundation products is the market potential for powder. Historically, there was a great shift to pressed powder when it first appeared, and it has maintained its lead in use even today. According to a recent independent survey, face powder is used by 57.9 per cent of American women, with usage varying from 44 per cent at the age of 15 years to 65 per cent at the age of 55 years. Although this is higher than the figures for usage of some other products, the market is far from saturated; it is likely that over-all usage has not increased beyond normal population increase and that new users have been confined chiefly to the young group just reaching adulthood.

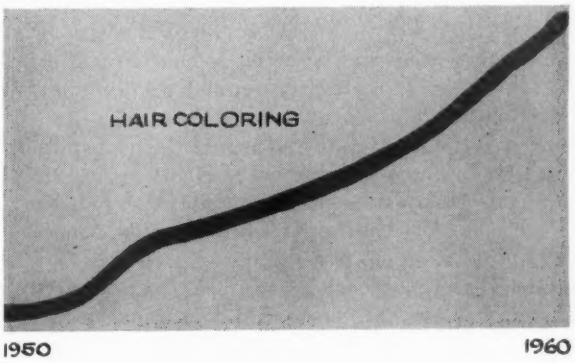
The result of a new development in a product is clearly demonstrated in face powder. Women were quick to respond to the advantages in application and carrying of the pressed powder. Although the over-all use of powder has not shown an upward trend, the pressed form has, and, in 1960, face powder and cake powder accounted for $64.2 million in sales by manufacturers. When a further development combined powder with a foundation in a compressed form, many users turned to this. A small portion of the regular pressed powder market still uses this type, chiefly the younger group; others use it for touching up their makeup.

That the face powder market has a good potential for growth, the figures quoted clearly show; the pressed powder market is also showing some growth. However, loose powder is increasingly coming back into use. Here we return to the connection with liquid makeup. With the increasing use of liquid foundations, women are turning to loose powder as a finish to achieve a matte appearance. As a consequence, the development of colorless powder to be used over foundation with color has helped powder sales to some extent. (Some of the younger group use liquid foundation without powder because they prefer a ruddy, faintly gleaming look.)

It appears that the industry should turn now to promoting an increased use of loose powder among older women. Having more time and money to devote to making up, these women use the loose powder over foundation in basic morning and evening make-up, and the pressed for touching up. The younger women, teen-agers, and young business and married women, will probably continue in their use of pressed powder, but here, too, there is much room for growth.

Rouge

Contrary to the ideas of some in the industry, survey figures show that rouge is used in some form by approximately 39 per cent of American women, although it accounts only for $7.2 million in manufacturers' sales. This usage varies from 19 per cent among those 15 years old to 46 per cent among those of 55. Although the growth of this market has been limited, after a decline some years ago it has remained a steady segment of the industry. There are possibilities for growth, however. The emphasis on total makeup is encouraging the artful use of rouge to complete the job. There has been some concentra-



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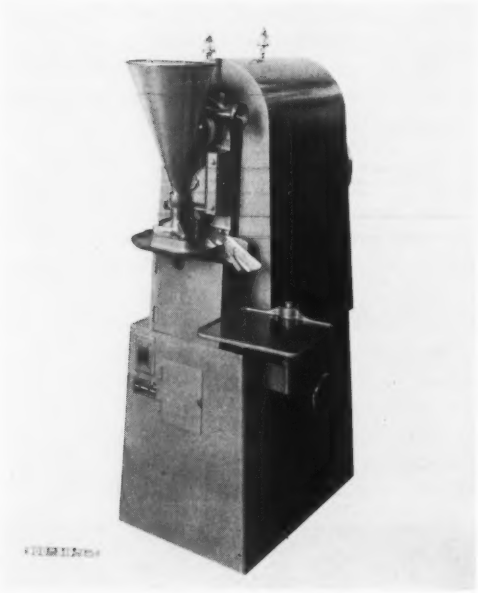

Stokes Model F punch machine

COMPRESSION CHARACTERISTICS IN TABLETING

An Experimental Study

BY LEONARD L. KAPLAN
STERLING - WINTHROP RESEARCH INSTITUTE

and J. EDWARD WOLFF
WALKER LABORATORIES

Only in recent years has pharmaceutical literature presented more than an occasional paper concerned with tableting problems. Higuchi and coworkers have explored the physics of tablet compression with particular references to certain aspects of granulation treatment and properties, such as lubrication[1] and porosity.[2] Some workers have investigated other aspects of tableting such as granulation flow.[3] It is the purpose of this study to present a technique for the determination of the compression characteristics of materials used in pharmaceutical tableting prior to granulation, to record our laboratory findings, and to illustrate applications of these data to tablet formula development. It is hoped that by the application of the data herewith presented many of the hit or miss aspects of tablet formulation work can be replaced by approaches that lead to more predictable results.

This method has proved to be a definite aid in the development of commercial tablet formulas. The procedures involved are not new. At the turn of the century, workers studied the compression characteristics of pure substances such as the halides of sodium, potassium, silver, and thallium,[4] and the effects of compression on powdered solids.[5] Many other similar references could be cited. However, it is felt that this may be the first report on the use of compression characteristics of materials as an aid to tablet formula development work.

Tableting is as much an art as a science. Up to this time, the formulator has had to rely on trial and error methods to determine the best method of granulating in developing tablet formulas. Certain formulations can be prepared by the double compression

or "dry-slugging" technique. Other formulas require treatment with aqueous or alcoholic excipients to make a final granulation that will compress well on a high-speed tablet machine. Proper preparation of the granulation is therefore the most important and also the most trying of the tablet-maker's duties.

The tablet machine can be considered the constant or unchanging factor in the development of a formulation. To avoid the usual problems of capping, binding, and sticking the choice of the granulation method must be varied according to the ingredients in the formula. Therefore it was deemed necessary to learn more about the materials commonly accepted for tableting, and to determine how each behaves under pressure. As a result of this study, the following information was found essential and has been classified and tabulated as follows:

A. Weight of powder required to fill a definite die volume

B. Volumetric ratio, or the change in volume of a powder upon maximum compression in a die
C. Degree of difficulty of ejection of the test slug from the die
D. Lamination of the test slug
E. Sticking characteristics of the compressed material to the punch faces
F. Disintegration properties of the test slug

Experimental

A Stokes Model F single punch machine with a one-half inch die and flat face punches was used. The lower punch was dropped to its maximum depth in the die. A solid, one-half inch steel plug cut to exactly 0.500 inch ± .001 inch was placed in the die cavity and the lower punch raised to bring the solid plug flush with the surface of the die table. The lower punch was then locked in that position to insure a constant volumetric powder fill exactly one-half inch thick. The plug was then ejected. Having made this setting, the upper punch was put into place and locked.

All materials studied were used in the form of commercially available powder. No attempt was made to alter the physical state of the powder, with the one qualification that the powder must pass through a #40 mesh screen to eliminate any agglomerates. In some cases granular material was used to compare results of different mesh sizes. The lower punch was dropped to its half-inch fill position and the powder charged into the die. No attempt was made to pack the powder tightly into the die; rather, it was allowed to fall freely, simulating the action of the feed shoe, and a spatula was passed over the die cavity a number of times to cut the level of the powder fill exactly even with the die plate surface. The fly wheel, with sufficient pressure applied to prevent the wheel from making a complete revolution, was turned by hand to compress the powder in the die. The wheel was then backed off until the upper punch rose out of the die and was in its top position again. This pressure aplication was repeated three times to the same test slug, to insure that the maximum density of the compressed powder was achieved. The test slug was finally ejected from the die by turning back the fly wheel. Five test slugs of each compound investigated were made by this procedure to demonstrate the reproducibility of the results. The die and punches were thoroughly cleaned before the introduction of a new compound, but not during the compression of the five test slugs of each compound. In this way, it could be noted if the powder had a tendency to build up on the die wall or on the punch faces. Some materials, powdered sugar, for example, will build up in the die to such an extent that the upward ejection stroke of the lower punch almost rips the die out of its position. Other materials such as Carbowax 4000 will adhere to the punch faces, causing sever sticking.

The data herewith presented have been tabulated according to the usual or accepted use of the material in a tableting formula. More than 100 individual substances were studied in this project, but, for purposes of presentation, only the more commonly used will be discussed.

The terminology used in expressing and defining the resultant data is as follows:

A. *Fill weight*—the weight of the powder required to fill the one-half inch depth. This is determined by weighing the test slug produced. (In cases of severe binding or sticking where clean slugs were unobtainable, no values are listed.)

B. *V/v ratio*—thickness of the powder fill (0.500 inch) compared to that of the compressed material. Accordingly, a powder which compressed to a 0.250 inch slug would have a ratio of 2:1.

C. *Difficulty of ejection*—classified as none(—), slight (1), moderate (2), or severe (3), depending on the resistance encountered in ejecting the slug from the die.

D. *Lamination*—physical inspection of the test slug after ejection, designated as (+) if noted or (−) of absent.

E. *Sticking*—physical inspection of the slug and punch faces after ejection, designated as (+) if noted or (−) if absent.

F. *Disintegration*—in 37° C. water, using the

(*Continued on page 656*)

O-T-C
Ethical or Proprietary?

BY MILTON MOSKOWITZ

Ethical drug companies are wondering whether to promote their nonprescription drugs directly to the public.

To be ethical or not to be ethical: That is the question facing a good section of the pharmaceutical industry today. Whether it would be nobler and wiser to continue to concentrate on ethical drugs, promoting them to doctors and pharmacists; or whether it would be more far-sighted and courageous to invade the proprietary field, promoting directly to consumers?

This is, let's face it, a tough problem for manufacturers like Upjohn, Abbott Laboratories, Smith Kline & French and Parke, Davis. These companies belong to the ethical drug wing of the pharmaceutical industry. Traditionally, they have dealt only with the medical profession in promoting their products. This is not to say that they make only products that can be bought with a prescription. Upjohn, Abbott and Parke, Davis have dozens of products that can be had simply for the asking at any pharmacy. However, even these products have rarely, if ever, been promoted to the general public. They belong to that category known as over-the-counter or O-T-C products—nonprescription drugs whose sales depend on recommendations from doctors and pharmacists or word-of-mouth recommendations from friends.

For most of the past 15 years the ethical drug producers have not had to think too seriously about the marketing of their O-T-C products. In a sharp reversal of pre-World War II patterns, ethical drug sales leaped far ahead of sales of proprietaries. Turnover in ethical drug products was so rapid that the companies had enough on their hands in marketing to physicians, without taking on the additional task of promoting specialties to consumers. In the past few years, however, the climate has changed. There has been a marked slowdown in output of new ethicals. At the same time, proprietaries have remained strong, with massive amounts of consumer advertising pushing volume to record highs. A single product, Anacin, now contributes more than $40,000,000 of volume to American Home Products. Bufferin and Bayer aspirin each deliver more than $30,000,000 in sales to Bristol-Myers and Sterling Drug, respectively. Dristan has also become a plus-$35,000,000 business for American Home.

Especially painful to the ethical drug companies has been the erosion of their share of the vitamin business, a market in which they had pioneered. Abbott, Upjohn, Squibb, Lederle and Parke, Davis formerly dominated the vitamin market. In the past five years this market has expanded tremendously. Some 75,000,000 Americans now take vitamins and annual retail sales have passed the $500,000,000 mark. But the pioneers have been left at the starting gate. The business has gone increasingly to mail-order houses like Hudson Vitamin, which undersells the ethical drug producers, and to big consumer advertisers like Miles Laboratories, which now has the top-selling vitamin brand in its One-A-Day label. In the past few years the vitamins produced by the ethical drug companies have not only experienced a decline in their share of the market but they have begun to suffer absolute declines in volume. It is clear that vitamin users are listening increasingly to the man on television rather than to their physicians.

The slowdown in the output of hot new prescription products has also meant that the more diversified companies, those with a foot in both ethicals and proprietaries, have managed to chalk up better performances than the more narrowly based ethical drug producers. Among the recent star performers have been Bristol-Myers, which does 75 per cent of its business in proprietaries; Sterling Drug, which does 47 per cent of its volume in proprietaries; and American Home Products, which does 25 per cent of its business in proprietaries.

These trends are now coming to a head. Action has already been taken on several fronts. Here is a brief rundown:

U. S. Vitamin & Pharmaceutical Corp.—Noting the sharp upswing in sales of consumer advertised vitamins, this company has announced that it is planning to enter the proprietary field in the near future, presumably with a vitamin preparation.

E. R. Squibb—This division of Olin Mathieson Chemical Corp. has one of the oldest names in the ethical field. At one time it also enjoyed a strong franchise with consumers, but in recent years it had neglected this area and confined its efforts to ethical drug marketing. Now it has done an about-face. One of the earliest developers of vitamins, Squibb was loathe to see its business in this area evaporate. About two years ago it therefore began promoting Vigran vitamins to the general public. At first, because the company was fearful of adverse reactions

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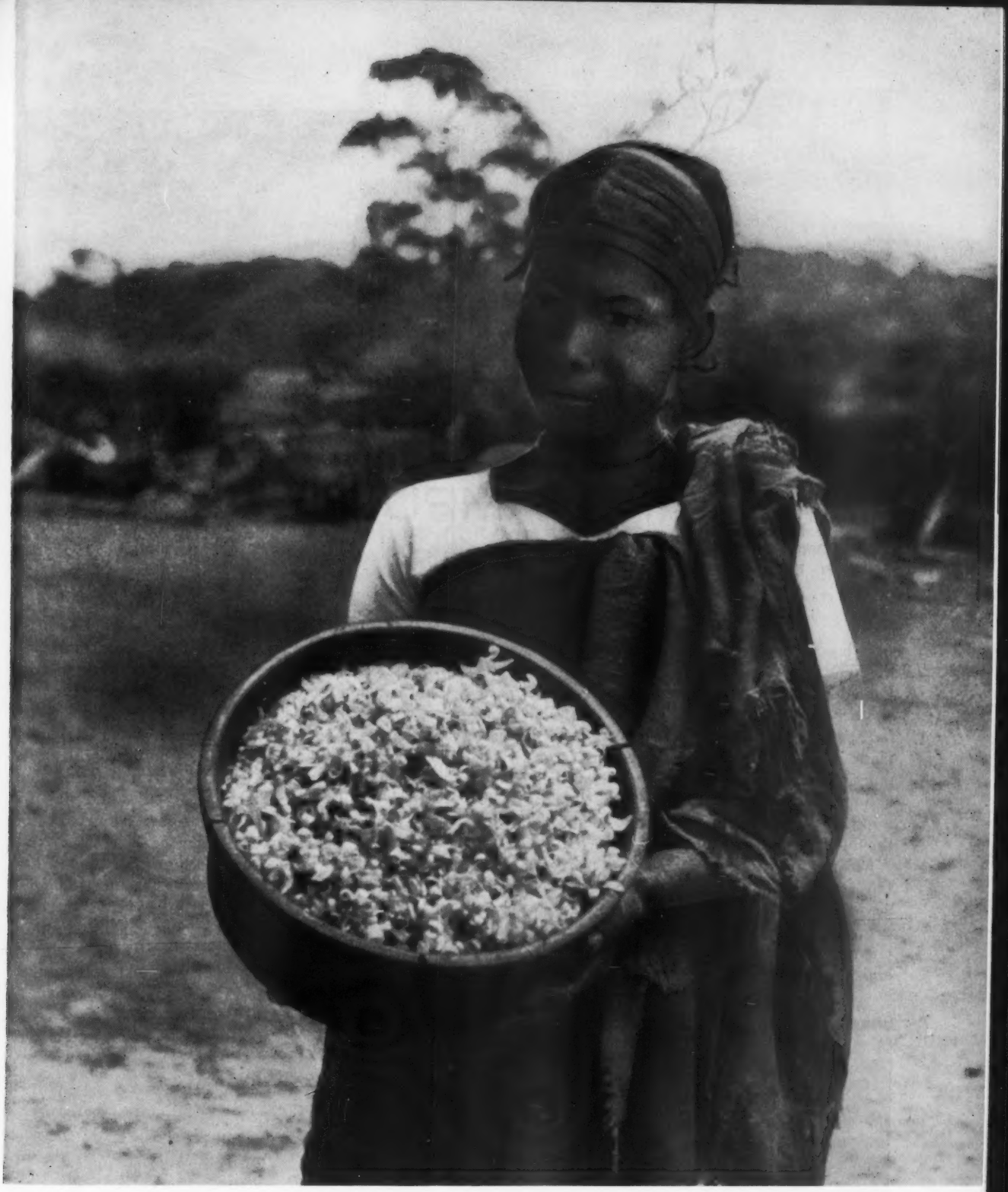

Orange Blossoms in North Africa . . . Oil from the flowers of the bitter orange is said to have been called neroli oil after Princess Neroli of Italy, who made it fashionable in the 17th Century. In North Africa, harvesting takes place in April, extraction is by distillation. Neroli oil is a requisite in the classic eau de cologne, and in other florals. The leaves are also distilled, producing petitgrain bizarade oil.

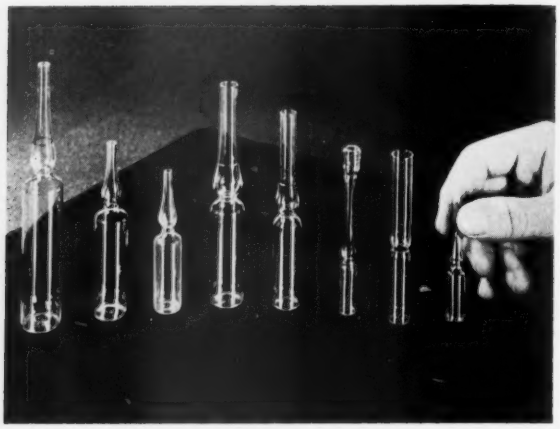

Figure 1. Some of the variety of ampules made by Wheaton Glass Co.

A change to radiant heating speeds production, improves quality, and eliminates rejects in the manufacture of ampules and vials.

ANNEALING AMPULES

BY GEORGE J. STRAUBMULLER

VICE-PRESIDENT, TUBING AND TUBING PRODUCTS DIVISION, WHEATON GLASS COMPANY

To boost output and meet rapidly rising demands, the Wheaton Glass Company, oldest producer in the United States of tube-made ampules and vials, added another new plant last year to its manufacturing facilities in Millville, N. J. Production in the new plant is devoted entirely to high quality glass ampules, which are made from Type 1 borosilicate glass and used for injectibles, and vials, which are used for injectibles, capsules, tablets, and cosmetics. A few of the different types of ampules are shown in FIGURE 1.

Modern in every respect, the plant has coordinated the latest in automatic glass-making techniques with advanced Gradiation heating methods developed by Selas Corporation of America, Dresher, Penna. Selas engineers, working closely with Wheaton research and engineering staffs, have helped perfect heat processing equipment which is producing ampules and vials of great strength, clarity, and brilliance in a fraction of the time formerly required, at a fraction of former costs.

For example, the 19 compact automatic lehrs shown in FIGURE 2, which are equipped with Selas Duradiant-burner roof panels, have increased the production rate for annealing ampules and vials 25 per cent over the previous flame-burner method used. A longer, Duradiant-burner-heated lehr at the end of this line, which fuses printing into ampules, has doubled the production rate over the former flame-heated method.

In addition to increased production, many other quality and economical benefits are gained with the modernized, better synchronized production system,

Figure 2. The 19 automatic gas-fired lehrs with Duradiant-burner roof panels, for annealing ampules and vials, stretch the length of the plant.

Figure 3. Conveyor carries vials into lehr for critical annealing. The stacks of tubing feed into the forming machine at the right (not shown).

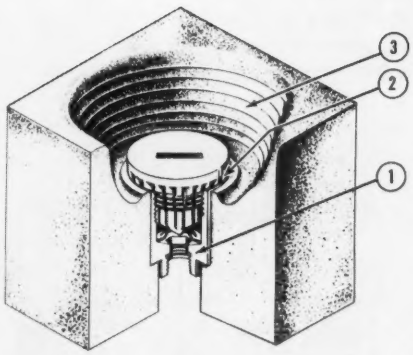

Figure 4. Diagram of Duradiant burner. Gas-air mixture enters (1), moves to burner (2), and passes through threaded refractory orifices (3).

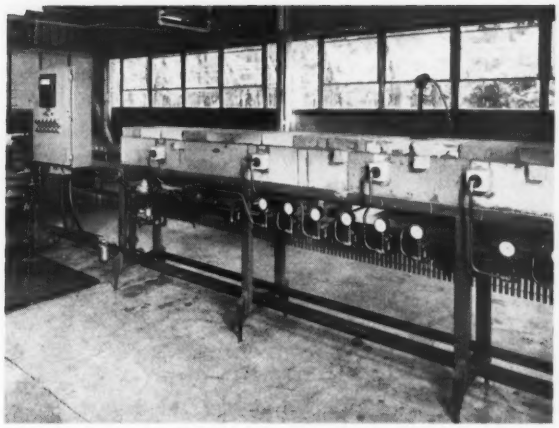

Figure 6. Entrance (left) and heating section of lehr for fusing silk screen printing into glass. Pressure gages give individual control.

as can be seen from the succession of operations involved.

When the tubing from which ampules and vials are made arrives at the plant, it is weighed with microscopic accuracy to segregate variations in the wall thickness of the glass. The various thicknesses are grouped to run individually through different forming machines and annealing lehrs, which eliminates the need for constant changing and adjusting of heat in any one lehr.

The tubing, furnished in 5-foot lengths, is next taken to the work area, where it is fed into a line of 25 ampule-and-vial-forming machines. The ampule stems are pulled, constriction formed, and work-pieces are bottomed. These glass pieces, when released from the forming machines, are automatically transferred onto conveyors which take them to have stems trimmed and glazed, constriction scored, gold band identifications applied, and stem O.D. gaged.

The completely formed and marked ampules, or vials, are then automatically fed onto the wire mesh conveyor belt behind each forming machine, which carries them to and through the adjoining lehr for the critical annealing operation shown in FIGURE 3.

A few seconds after the glass pieces enter the lehr, they are exposed to heat from the Duradiant-burner roof panel, which is located 1½ feet inside the entrance and only 1½ feet above the ware. The temperature curve in the heating section of each lehr is adjusted according to the thickness of the glass being treated, as mentioned above, and peak temperatures range between 1200° and 1240° F. Traveling in such close proximity to the heat source, ampules and vials require only three minutes of exposure to the burners to bring them to their desired temperature.

Extremely close control of heat input to the glass pieces is a "must" during this critical three-minute travel under the burners. The different work-piece temperatures to which each of the burners in the ampule lehrs' and burners in the vial lehrs' roof panels are adjusted must be held to within ±5° F. of the predetermined levels. The planned temperature curve, rising from a low to a peak at the midpoint of the roof panel and then tapering off gradually, must be followed with the utmost precision.

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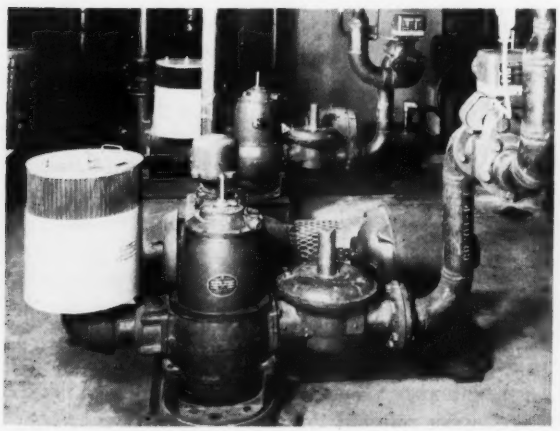

Figure 5. Combustion controllers supply lehrs with fuel. Natural gas is combined with room air, mixed precisely and compressed for burners.

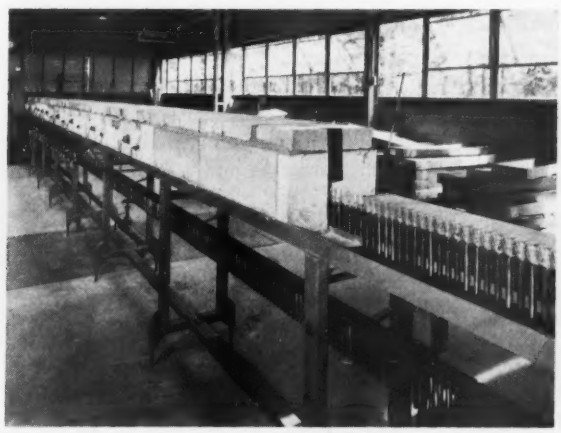

Figure 7. After 3 minutes of controlled heating and cooling, ampules emerge at right end of 46-foot lehr with printing fused into the glass.

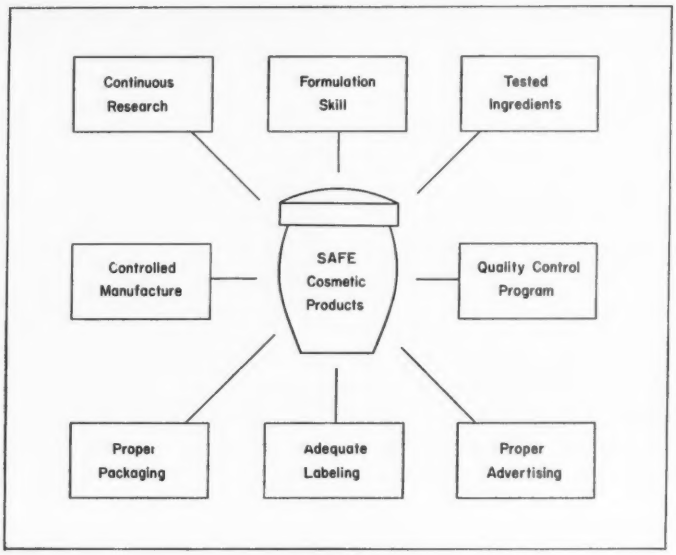

FIGURE 1

The Science Of Safe Cosmetic Formulation

BY GLEN J. SPERANDIO, Ph.D.
ASSOCIATE PROFESSOR, SCHOOL OF PHARMACY, PURDUE UNIVERSITY

The following two articles were presented at the Symposium, The Scientist's Contribution to the Safe Use of Cosmetics, co-sponsored by the Committee on Cosmetics of the American Medical Association and the Section on Pharmacy of the American Association for the Advancement of Science, at the 127th Annual Meeting of the A.A.A.S., in New York City, December 29, 1960. This completes our presentation of all nine papers presented at the Symposium.

Cosmetics are a paradox in that, although classed as luxury items and nonessential materials, they are nevertheless considered necessities by the average American woman and are being accepted more readily each year as such by the male population; and, while their use is based on concepts as old as civilization itself, their development and production on a scientific basis is still in its infancy. Although retail sales of cosmetics now exceed a billion dollars a year, it is only within the past few decades that their distribution and use in the United States have had any governmental consideration and that much "official" thought has been given to their safety.

However, because of the increased importance of cosmetics in our way of life, they are commanding increasing *respect* from all levels of commerce and increasing *suspect* from governmental agencies charged with protecting the health and welfare of the American public. I do not mean to imply government disapproval of cosmetics—far from it—but, as cosmetic formulations become more precise and their production becomes a science, the industry assumes greater obligations to the consumer and consequently occupies a greater importance in the eyes of the law enforcement agencies.

Today, cosmetic formulation and manufacture is a science. No longer can a preparation be conceived and hastily put on the market without considerable forethought, planning, and testing. True, the mud pack of Cleopatra still has essentially the same basic ingredients as the beauty mask of Mrs. America. but the methods of producing them are tremendously different. A cosmetic today is the result of scientific planning and coodinated efforts that have combined to produce a safe aid to personal attractiveness.

I have used the word "safe" and this leads to the

thesis of my presentation: The Science of Making Safe Cosmetics. To consider this subject properly, we must first understand what is actually meant by a safe cosmetic. To me, such a product must satisfy six requirements.

1. It must be able to be used by any normal person indefinitely, without producing any kind of untoward reaction. (Since many cosmetics are used every day of an adult's life, this one feature alone makes them different from all other preparations.)

2. If excessively used, or misused, or even taken internally, it must not cause serious or lasting effects. (An extensive survey over a four-year period showed that almost 5 per cent of the reported cases of poisoning were cosmetics.[1] Since cosmetics are formulated to look and smell attractive, their ingestion by children must always be considered as a distinct possibility.)

3. It must contain only ingredients that have been proven to be nonharmful to humans. (Here, biological and clinical testing makes an important contribution to safety of usage.)

4. It must be formulated to support the claims made for it by the advertisements. (To be innocuous in itself is not enough; a safe cosmetic must also be able to accomplish its intended purpose.)

5. Its development must be based on established scientific facts. (The need for a cosmetic preparation must exist, and the ability of the product to fulfill that need must be established.)

6. It must remain physically and chemically stable. (Even under adverse conditions, the truly safe cosmetic should be formulated to resist deterioration and decomposition.)

There are four major causes for impaired safety of cosmetics. First, components of the products may be irritating or injurious; second, therapeutic agents in cosmetics may exert side effects; third, some cosmetic preparations can produce sensitivity in allergic individuals or even in nonallergic users after repeated exposure; and fourth, products may decompose, with the formation of injurious substances.

Before going any further, I would like to point out that by far the majority of cosmetics on the market today are completely safe, and that the cosmetic manufacturers are conscientiously trying to produce only high quality and safe products. It is my personal feeling that the possibility of serious damage from the normal use of cosmetics is almost negligible, and their danger has been given too much publicity. The basic idea is not that cosmetics are unsafe; rather it is the intent to keep them safe—and if possible to make them even safer—in view of new scientific developments. As more synthetic compounds are introduced and as the types of materials used in cosmetics are expanded, it is quite evident that continuous research on their toxicities is mandatory.

Thus, cosmetic development consists of the proper combination of scientific principles and technical processes, and many different facets are involved before a product is released on the market. The requirements for a safe cosmetic have been itemized. Now let us consider how a product can be made to meet these specifications. There are eight essential components of a safe cosmetic. These are shown in FIGURE 1.

First, of course, we must have tested ingredients. Only substances proved harmless to humans should be considered in any cosmetic formula. Each component should be used for a specific purpose and in quantities that will insure its maximum effectiveness. In addition, high standards for quality and purity of the raw materials are necessary.

An intangible but highly important part of every cosmetic is the skill of the formulator. Good cosmetics are not just put together and mixed haphazardly; the art of combining individual materials to achieve a finished product is not easily come by. Just as we have excellent chefs who can prepare a gourmet's delight from simple foods, so do we have cosmetic

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FIGURE 2

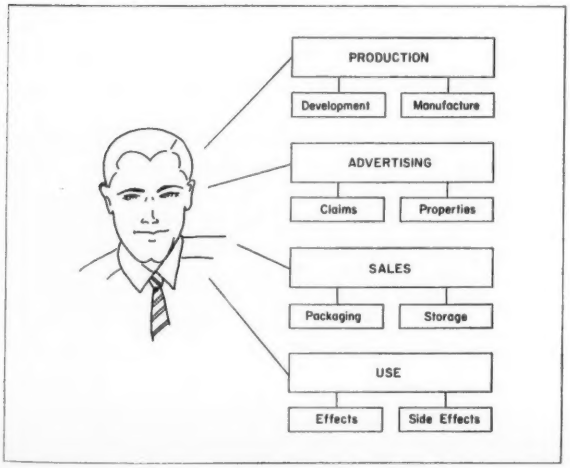
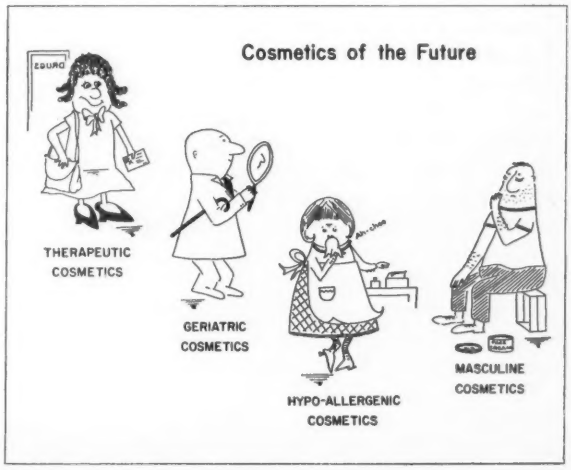


FIGURE 3



Methods for the Appraisal of the Safety of Cosmetics

BY ADOLPH ROSTENBERG, JR., M.D.
DEPARTMENT OF DERMATOLOGY, UNIVERSITY OF ILLINOIS

In considering the methods for the appraisal of the safety of cosmetics, it seems desirable to consider the over-all problem from three subsidiary points of view: (1) What are the hazards? (2) What are the methods for their appraisal? (3) What extrapolations can be made from the sample studied? It is then seen that the over-all problem has both a biological and a statistical component. I shall start with the biological aspects.

The hazards can be divided into systemic and local ones; but I shall not consider the systemic hazards, which are thoroughly gone into in the monograph, "Appraisal of the Safety of Chemicals in Foods, Drugs, and Cosmetics."[1] The cutaneous hazards are listed in TABLE 1.

TABLE 1
Cutaneous Hazards

Irritation
Skin
Mucous Membrane
Pilo-Sebaceous Unit
Hair

Sensitization
Allergic
Photodynamic

As is seen, the skin hazards are divided into two large groups, irritation and sensitization. It is not easy to draw a sharp line between these. A primary irritation is defined as an inflammation brought about without the intervention of an "antibody system;" whereas, a sensitization is an inflammation requiring for its development the participation of an "antibody system" specific for the material in question. These points have been discussed by me in greater detail elsewhere.[2–4]

Primary irritants should be divided into absolute and relative ones. The distinction between these is that an absolute primary irritant is one that is capable of producing the inflammatory response in the vast majority of people on first exposure; whereas, a relative primary irritant causes inflammation only if certain ancillary circumstances, to which I shall refer later, exist, or only upon repetition of contact.[2] Similar statements could probably be made about irritants for mucous membranes; but, in general, less information exists here.

The pilo-sebaceous unit consists of the hair follicle and the attached sebaceous gland. Irritation of this unit can produce an ordinary folliculitis, or it can produce an acneform response, the latter implying that there has been some blocking at the orifice of the unit, usually from a keratinous ring, so that sebaceous material can be either not excreted or excreted only with difficulty. In general, it might be said that information about exogenous pilo-sebaceous irritation is sparse. Predictive tests for the potential acnegenicity of a new compound are not in a satisfactory state. Probably the only worthwhile technique is to have the test subjects apply the material to the face, back or chest for about six weeks to determine whether there is the development of acneform lesions. For such studies an adolescent population is possibly the most sensitive indicator, but in this case another adolescent group should be treated with a control product, so as to exclude the normal development of acne at this age. One-half face tests could be done, but these, I think, are not especially trustworthy if the subjects apply the preparations themselves. Many substances will damage the hair by either making it dry or more brittle, or both. Methods for testing for this are rather obvious and straightforward. Any substance that will produce an inflammation in the integument in the area in which the hair follicle exists may also lead to damage of the hair, which, if severe enough, can eventuate in an alopecia.

In considering the methods for appraising the potentiality of substances with respect to these various types of irritation, I shall dwell primarily on irritation of the skin, for this is the most important member of this group and has received the most study. The Food and Drug Manual already mentioned[1] gives details for the study of cutaneous irritation. The technique advocated there is as follows:

"Primary irritation of the skin is measured by a patch-test technique on the abraded and intact skin of the albino rabbit clipped free of hair. A minimum of six subjects is used per preparation tested. The

method consists in introducing under a one-inch patch 0.5 ml. (in case of liquids) or 0.5 gm. (in case of solids and semisolids) of the test substance. It is also desirable in the case of solids to attempt solubilizing in an appropriate solvent (see above) and to aply the solution as for liquids. The animals are immobilized in an animal holder with patches secured in place by adhesive tape. The entire trunk of the animal is then wrapped with rubberized cloth for the entire 24-hour period of exposure. This latter procedure aids in maintaining the test patches in position, and, in addition, retards the evaporation of volatile substances. After the 24 hours of exposure the patches are removed, and the resulting reactions are evaluated on the basis of scores in Table 1.

"Readings are made also after 72 hours, and the final score represents an average of the 24- and 72-hour readings. An equal number of exposures are made on areas of skin which have been previously abraded. The abrasions are minor incisions through the stratum corneum, but not sufficiently deep to disturb the derma (that is, not sufficiently deep to produce bleeding).

"The total erythema and edema scores are added in both the 24- and 72-hour readings, and the averages of the scores for intact and abraded skin are combined; this combined average is referred to as the primary irritation index. It is useful for placing compounds in general groups with reference to irritant properties."

I shall discuss this technique in some detail, since it carries the official sanction of the Food and Drug Administration, and, furthermore, no other tests for this purpose have been commonly adopted. The big merit of this test is that there is a considerable body of experience with it. However, it has several serious drawbacks, and it is important that users be aware of these deficiencies. First of all, the test is on a rabbit, not on a human. It is generally agreed that the rabbit and the human skin differ vastly with respect to propensity for irritation. It would seem that, if an animal species is to be used, unless a particular species is found which correlates very well with human skin with respect to cutaneous irritation, more than one species should be employed so that there would be more confidence that any results obtained would be applicable to human skin. An even greater weakness is that the test determines irritation only under occlusive conditions.

In order to document the importance of occlusion on irritation, I should like to discuss factors that influence skin irritation. In general, there are three autonomous factors in its development. These are: (1) the substance, (2) ambient conditions, and (3) the host. The important factor in the immediate discussion is the second, namely, the ambient conditions, which can be divided into (a) the microclimate, (b) the macroclimate, and (c) concomitant exposures. The influence of the microclimate is well illustrated by the work of Holland, Cox and Dehne.[5] TABLE 2, adapted from their paper, illustrates the effect of occlusiveness on irritation developed by the same fabric. The occlusiveness, in turn, presumably influenced the microclimate.

TABLE 2

Shrink Resistant Woolen Flannel	Number Tested and Read	Number Positive	Percentage Positive
Standard Occlusive Patch	258	22	8.5
AIHL Patch	260	3	1.0
Arm Band	260	0	0

It seems definite that the more occlusive the patch test, the more likely is irritation to develop. To employ a technique such as the one under consideration for predicting the irritation potential of most cosmetics or their ingredients is unrealistic, since, generally, these substances will not be used in an occlusive fashion.

The Food and Drug Manual lists additional procedures for the appraisal of systemic dermal toxicity. These are: (1) acute dermal toxicity, (2) subacute dermal toxicity 20-day experiment, and (3) subacute dermal toxicity 90-day experiment. The purposes of these studies are to determine whether a long-term continued application of the material will produce any systemic consequence, and whether irritation may be produced by protracted use, even though a shorter period of use may not yield such. The details for these tests are given in the Manual. Tests for the evaluation of mucosal irritation, especially that of the ocular mucosa, are also given in the Food and Drug Manual. I shall not consider any of these tests. The principal criticism of the long-continued tests is, again, the fact that they are made on a species other than man.

In studying primary cutaneous irritation in man, the usual technique is to perform a 48-hour patch exposure test, which consists of applying the substance under a closed patch, leaving it on for 24 or 48 hours, and then reading the site. This procedure will detect obvious irritants, but it, too, has the deficiency of being an occlusive test. This type of test could be done without the occlusive covering; but in this event it would err in the opposite direction, in that it would fail to show what the product might do under more stringent conditions. The ideal procedure, either on man or animal, would be to apply the material both covered and uncovered. If the proposed use involves only one way, that is, covered or uncovered, the testing procedure employed should be the corresponding one.

Further, in performing such tests it is necessary to consider the influence of the macroclimate and the biologic variability of the subjects. TABLE 3, taken from Holland et al.,[5] demonstrates the importance of the macroclimate. A wool flannel material was applied as a patch test in August, and again in October.

A striking difference in the incidence of irritative reactions was observed.

TABLE 3

Standard Occlusive Patch Test with Shrink Resistant Wool Flannel	Total	Positive Second Application	Negative Second Application	
Positive first application	113	56	57	Tests made in August 178 positive
Negative first application	312	65	247	
Total	425	121	304	
Positive first application	12	5	7	Tests made in October 24 positive
Negative first application	581	12	569	
Total	593	17	576	

By "biologic variability" is meant the variation seen from one person to another; but even more important in this connection is the variation in the same person from one time to another, dependent on whether the skin is physiologically normal at the time of testing. Physiologic normality, among other things, presupposes that the subject has not recently had any widespread dermatitis, or that the subject has not been used for a large number of similar studies.[2] The influence of repeated testing is brought out in TABLE 4, which is taken from a study by Von Haam and Mallette.[6]

TABLE 4*

	0—+	++--++++	Total
Previously used subjects	137	103	240
New subjects	231	9	240

*Modified from Von Haam & Malette.

Another weakness of the 48-hour patch test procedure is that it tests only for acute irritation, and hence will reveal only absolute irritants. Cumulative irritants will not be picked up by this procedure.

I have already alluded to the fact that one class of relative primary irritants causes inflammation only if certain ancillary circumstances exist. One such circumstance is the application of the material to inflamed skin or to skin which was recently the site of an inflammation. Actually, the outcome of applying a borderline irritant to already inflamed skin is not easy to predict, since several variables, among them time, play a role.[2] Such a possibility must be considered in the potential use for a product, because it may be designed to be applied to an inflamed skin, for example, in acne or eczema. There is still another circumstance which is a bit more subtle, namely, the application of the product at the time that another material is applied which can influence skin penetration of skin reactivity. Of the materials in this category, surface active agents—especially detergents, are the most likely to be encountered. It has been reasonably clearly shown that the simultaneous coexhibition of mild irritants with detergents potentiates irritation; hence, if it is contemplated that a cosmetic is to be used in conjunction with such materials, any studies for irritation should include the simultaneous application of the two materials.

The difficulties inherent in predicting the development of an allergic sensitization are considerably greater than those in predicting an irritation. This is so because the genetic makeup of the host plays a more important role in the development of a sensitization than it does in the development of irritation. Thus, in the selection of a sample on which sensitization is to be attempted, there is an important but, at present, undetectable variable, namely, the genetic factor, which will determine whether or not the selected sample is appropriate. The guinea pig is the only common laboratory animal that can be employed for predicting the devlopment of this type of sensitization. For unknown reasons, rabbits, rats, mice, and the like fail to develop this type of response.[7]

The usual technique employed in the guinea pig is the one originally devised by Landsteiner. Essentially, this consists of introducing the material intradermally for ten consecutive applications. The animal is then given a rest period and, finally, challenged, to determine whether or not an exalted response is now obtained. A serious drawback to the procedure is one inherent in it, namely, that the species used is not man. There is grave question as to whether the fact that a guinea pig does or does not develop a delayed type of allergic sensitization as a consequence of this procedure in any way foretells whether a human will develop an allergic sensitization under the proposed conditions of use. In general, the guinea pig is thought to be far less susceptible to the development of this type of sensitization than is man. Consequently, the fact that the guinea pig fails to develop a sensitization is little evidence that humans will not. On the other hand, the material is introduced into the guinea pig intradermally for ten consecutive days, which is a much more stringent procedure than would be encountered in man, at least in the case of cosmetics; if the guinea pig should develop a sensitization under these circumstances, one would still be in doubt whether a human, from much more casual contact, would. All in all, this means that animal tests, at least as they are currently carried out on the guinea pig, are totally unsatisfactory for the prediction of human sensitizations.[3]

The techniques using human subjects that have been advocated for predicting the development of delayed type of allergic sensitization are listed in TABLE 5, below.

TABLE 5

Predictive Techniques
Schwartz-Peck
Landsteiner-Draize
Shelanski-Shelanski
Brunner-Smiljanic
Traub-Tusing-Spoor

I shall not consider them in detail, as I have done

(*Continued on page 681*)

AMA
PACKAGING EXPOSITION

BY RICHARD BURTON

The thirtieth annual packaging exposition of the American Management Association was primarily a report of consolidated accomplishments. Developments in the plastics field dominated; there were few innovations among the other manufacturers of materials.

In paper and boxboard, for example, new constructions appeared to have absorbed the creative talents of designers. A sleeve structure, Gusset-Pak by Diamond National, which featured an open-end rectangular tube, used small tabs or flaps to secure the contents, to package multiple units with a minimum of board feet. This package is formed automatically at speeds up to 100 six-packs or four-packs a minute, and appears particularly suitable to packaging for promotion and combination purposes.

The Mead Corporation featured an adaptation of their Cluster-Wrap which has been widely accepted for packaging multiples of glass or canned items. Both Cluster-Wrap and its cousin, Cluster Pak are offered on a machine-lease basis that includes a continuous service policy. These packages, assembled without glue or staples, convert easily into effective display housing.

Cross-section of the free-piston aluminum aerosol can now used for Brylcreem, showing the polyethylene piston, which completely separates product from propellant, moves up as product is discharged. Can and gassing machine are by Bradley-Sun Div., the American Can Company.

Hylox, a new water-soluble film to compete with polyvinyl alcohols, was introduced by the Plastic

(*Continued on page 599*)

Newest container of Delrin, the thermoplastic polymer from DuPont's Polychemicals Division, is first cold-filled; then the bottom is spin-welded to the container by a process developed by Valve Container Corporation of America. The individual aerosol parts are shown here.

Plastic tube of polypropylene, lightest of the plastics, by Thatcher Glass Manufacturing Co., Plastic Container Division, resists moisture, heat, oils, greases, solvents, many chemicals; retains fragrances; also permits sterilization, which would be useful for packaging drugs.

UNION CARBIDE

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Division of Union Carbide Corporation

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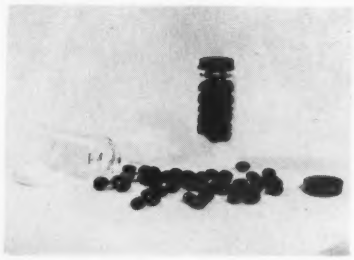

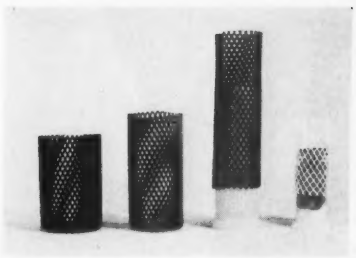

Cluster-Wrap (above) permits automatic collecting, loading, locking of multiple units without glue, staples or tape. Package opens to form effective display, is made on very simple machinery leased by Mead Corporation. Vial (center) by Brockway Glass Company uses glass tubing instead of conventional bottle form. One end is sealed with firm closure gripping both inner and outer surfaces; other end closes with a simple polyethylene snap cap. Vexar net cushioning (right) for glass containers is said to permit smaller cartons, to reduce breakage, and to allow automatic end-loading of cartons. The machines, which are under development by the Burton Machine Company, will use roll stock.

Film Division of Union Carbide Corporation. It is said to be made from a polyethylene oxide resin that softens in water at temperatures between 35° and 175° F. The film seems to have good sealing, printability and permeability characteristics, and is recommended for packaging pre-measured additives. It may later find markets as a container for chemical and industrial powders that must be added in exact amounts under conditions of controlled sequence and solubility. The handling of toxic items is another likely application. The film is now available on a limited basis, in thicknesses from 1½ to 10 mils, in rolls up to 20 inches wide.

Paper and plastics seem to have achieved similar progress in cushioning or protective packaging. One innovation is in knit paper, a material which in tube form may be nearly ideal for packaging glassware and other fragile items.

Foam molding, less than 18 months after its introduction, is now fully automated. It offers, in polystyrene, a cushioning material whose density and cushioning characteristics can be fully controlled. Foamed polystyrene, furthermore, offers high shock absorption at low cost, is lightweight, and retains its physical characteristics form −80° to 160° F.

Foamed styrene film has begun to achieve some of the promise foreseen by designers at last year's show. It lends itself to adoption in thermo-formed packages having the pliability of other films, with the added advantage of a rich, silky texture, a variety of colors, and high protective characteristics—all at a modest materials cost.

The Cubitainer produced by the Headwin Corporation has now entered routine production and is currently available in a wide range of sizes. The company has apparently emerged from the exploratory and experimental stage and is now concentrating on production of large quantities of commercially available stock containers made from cardboard stock with plastic linings.

Cubitainer (above right) by Headwin Corporation is now in sizes for bulk chemicals and drugs. The Waldorf Paper Products Company's polyester-lined paper container (below) could replace many glass and metal containers, greatly reducing weight and space. The hermetically sealed, disposable liner is by Minnesota Mining and Manufacturing Co.

Although Headwin is not now using polypropylene in its packaging program, this promising plastic is currently available from the Waldorf Paper Products Company in a boxboard-film combination. Waldorf produces a plastic-lined paper container with a hermetically sealed disposable liner made of Scotchpack, Minnesota Mining's heat-sealable polyester film, laminated to a thin sheet of kraft paper. Theoretically, this should take care of liquids incapable of being carried in Cubitainers. Concentrated products such as extracts and oils can be held in this lined

(Continued on page 654)

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can put you into

That step is to a contract filler! A contract filler relieves you of problems and expenses from the time you decide to work with him. His aerosol "know how" is put to work immediately in preparing your product for the aerosol market. He works with you from research and development stages to test marketing and on through continuous full-scale production.

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We have highlighted here a few of the more important advantages of doing business with a contract filler. For additional information, and a list of experienced contract fillers, write: "Genetron" Dept., General Chemical Division, Allied Chemical Corporation, 40 Rector Street, New York 6, N.Y.

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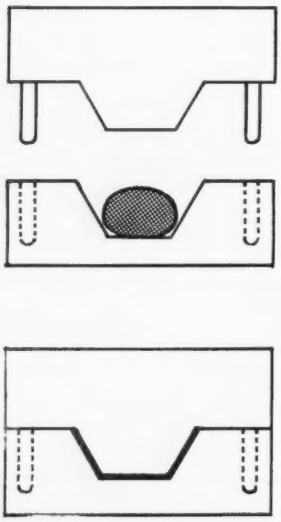


STRAIGHT COMPRESSION MOLDING

MOLDING PLASTICS

A few fundamentals indispensable for those who have anything to do with packaging.

In the past, when information about plastics was inadequate, a company may have used an inappropriate one. As a result, there are still individuals having to do with packaging who want no part of them. But getting the wrong plastic is far less likely now, because the information on the characteristics of plastics is not only fuller, it is also readily available; moreover, testing for compatibility as well as appropriateness is now a commonplace.

The most significant traits have now been determined for all but the newest plastics. These include a plastic's ability to resist deformation by high temperatures, its resistance to shock and to the force of simple tension, its elasticity, its reactions to certain chemicals and compounds, its loss of weight on aging, and its absorption of water, which could impair its shape and rigidity. Generally speaking, a plastics manufacturer can supply most of this information about a given material for the asking. And both manufacturers and reputable molders will insist on careful testing for specific characteristics in relation to any particular product.

Probably the first choice to be made, after the decision to use plastic, is which of the two basic types to use, a thermosetting or a thermoplastic material. On this choice depends the selection of one of the two basic molding techniques, by compression or by injection.

In *compression molding*, the plastic is softened by heat and then hardened by further heating. A specific amount of the material is preheated and loaded into one part of a heated two-piece mold (see cut). The mold is closed and pressure and further heat are applied, which sets the plastic (lower drawing). This is the so-called *straight compression molding. Transfer molding*, a variation of compression molding, is done by transferring the preheated, softened material in specific amounts to a closed mold by pressure, through an opening called a *sprue* in the first chamber, and the *gate*, which is the opening into the mold proper. *Runners*, that is, narrow canals, join the sprue and the gates when several molding cavities are involved. Here, too, further heat is applied in the mold, which sets the article.

Injection molding uses the principle of softening the plastic by heat and then hardening it by cooling. The material is fed into a heated cylinder where it softens, and is then pushed out the other end into a relatively cool, closed mold—via sprue, runners and gates—where it hardens and is then removed.

Thermosetting materials are compounds of resins usually in powder or fine granular form, which are softened by heat. Further heat causes polymerization, a linking of molecules into large molecules, which is an irreversible chemical change. Such materials as urea and phenol combined with aldehyde, polyester resins, and silicone and epoxy resins belong in this group.

Thermosetting plastics are usually molded by compression, those in powder form being first shaped into tablets of correct size and weight, which reduces dust and makes handling easier. The tablets are preheated to save molding time, since plastics are poor conductors and take a relatively long time to heat. This step also fosters uniform molding and better surface finish. Whenever possible, the variant, transfer molding, is used. This saves wear and tear on the molds, which remain accurate and retain their finish

(*Continued on page 654*)

Packaging and Selling

This year brings its own challenge. The biggest challenge of all, so far as individual businesses go, will be the challenge of the new product.

This is not a condition peculiar to this industry, but something that everybody in any kind of business must live with today.

For instance, in the presentation of the Fifty-Second Annual Meeting of the Grocery Manufacturers of America, a study showed that grocery store sales in 1958 increased 4 per cent, but the consumer purchase of new brands increased 32 per cent, and the share of the market of new brands increased 18 per cent.

Nearly everybody, at least in the sales and advertising departments, knows pretty well that those without a new product—and that means a product with a distinctive feature that a consumer can recognize—are apt to find themselves one of the wall flowers of the year almost without regard to the success of sales and advertising.

The frightening thing about all this is the very low percentage of success of new products and the relatively short life of those that do succeed.

For instance, in the cosmetic business there are approximately 25,000 trade mark products with an active commercial life. However, less than 5 per cent of these products do any commercial volume that could really be called successful.

What is it that gives a new product the personality and the opportunity for success, assuming that the company has a good name and that it has a competent marketing and advertising department?

First of all the product name. Without doubt a product's name has contributed as much to its failure or success as has any other single quality.

Probably the perfume branch of cosmetics has more failures than any other, and cosmetics, in turn, probably have more failures than any other packaged industry. This means that perfumes ought to be a top-notch field to study for case histories of failures and successes.

For instance, take one general field from which perfume names have been selected, that is color. A number of perfumes have been identified with a color. In practically every case this name has been an obstacle and a hindrance, rather than an aid, either because the color does not have a particularly favorable connotation, such as designating a flower as red or blue, when commonly this particular flower does not appear in nature under that color. In addition, people have strong color preferences and, no matter what color might be selected, red, blue, pink, black, white or yellow, considerable emotional response to this color has a very high negative quality.

The package, the theme of the product and the theme of the advertising, the distribution selected, the manner of presentation, and many divisions of the whole marketing problem can be burdens and obstacles on the introduction of a new product.

As a matter of fact, it is by no means remarkable that so few new products do succeed. Somewhere along the line somebody does the wrong thing, which brings about the negative emotional reaction from too large a section of the public.

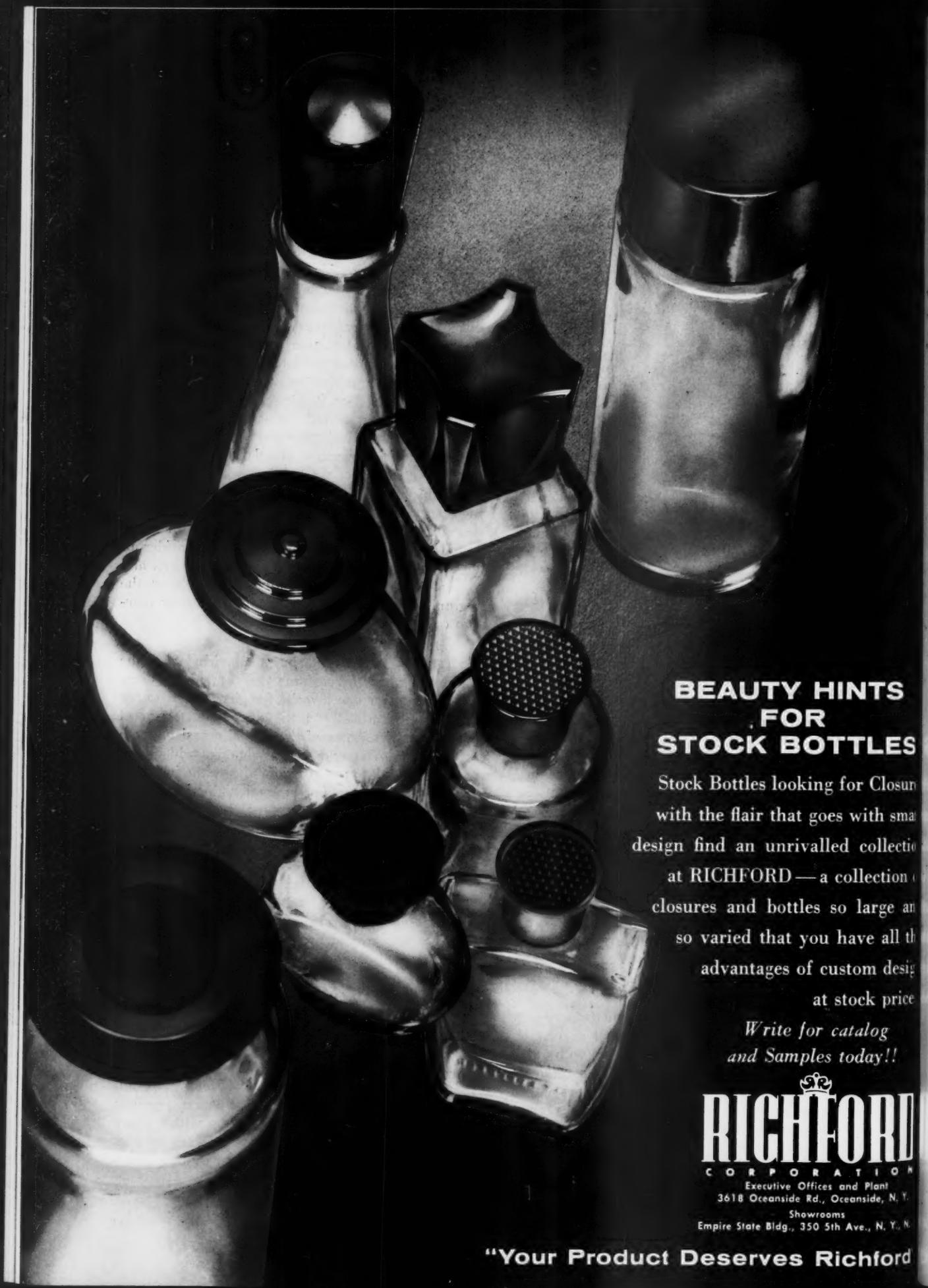
All this means is that we would probably have more successes if less than 10 per cent of them appeared on the market, or at least only so many as would give each producer ample time to consider all these factors, to test them out in various ways, and to explore the market carefully and slowly at the beginning so that both retailer and consumer reaction could be thoroughly studied.

We have said before that, since the lavish days of the war years when the perfume and cosmetic industry was the number one favorite for gifts, this industry has lost out drastically on the gift market to several other industries. Some of the special occasions, such as Valentine's Day and June graduation, which used to bring a small but worthwhile plus to the industry, has almost disappeared as promotional activities.

There is one holiday, however, that the industry does give considerable attention to, but, in our opinion, nowhere near the industry-wide effort that the volume of business from this day deserves. That day is Mother's Day which, this year, falls on Sunday, May 14th.

According to Federal Reserve Board figures, Mother's Day sales exceed Easter sales for the two weeks preceding both events. This is interesting, but the important fact is that our industry has almost forgotten Easter. The National Committee on the observance of Mother's Day estimates that there are 50 million mothers who will receive over $1 billion in gifts.

We also know that Mother's Day is now, in this industry, second to Christmas, and, for some companies who have been active in promotion, produces sales at about 25 per cent of Christmas, with a figure for a few outstanding companies reaching a sales volume of gifts that approaches 50 per cent of Christmas sales.



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"Your Product Deserves Richford

Apparently health and beauty products in the supermarket are still in the period of growth. According to one report, the new medicated makeup line just introduced by the Noxzema Chemical Company has been especially tailored for the supermarkets, and extensive promotion efforts will be turned in this direction.

For instance, in adjusting the line to a volume operation, Noxzema took the normal 12 shades in cosmetics and culled nine of these as probable shelf warmers. In further tests, the company found that between 50 and 60 per cent of teen-agers and women would use just two colors, a light and a dark shade, and then that the addition of one more shade, a medium, raised the acceptance factor to around 80 per cent.

In addition, on the advice of supermarket operators, a special rack has been developed as a shelf extender.

One of the most important of the supermarkets, Food Fair, has just announced a massive stamp bonus push for a wide variety of nonfood merchandise, which includes a number of health and beauty products. So far as we know, this is the first time that cosmetics and health products have ever been sold through the use of food stamps.

This will be a honey of a competitive factor if this promotion succeeds.

A frequent question from advertising agencies and some manufacturers concerns the percentage of sales spent for advertising in this industry.

Everybody knows that this industry spends a substantial amount in perfumes, cosmetics, and toiletries, as well as for proprietary medicines and specialties like vitamins.

As a matter of fact, one cosmetic company owned by an advertising agency reached what must have been an historic high by spending 50 per cent of sales on advertising. As a parenthesis, that company has not been too successful.

Of course, averages mean very little. It is like the old fable of a man who drowned crossing a stream whose average depth was only 16 inches. True—in our trade the variations are enormous and the amount spent for advertising is tailored to individual problems, the type of selling, the method of distribution, the ambitions of the company, and many other factors.

For instance, in the perfume industry the percentages of sales spent for advertising will run from 5 per cent or less, for certain smaller companies, to well over 20 per cent for other companies.

Also, let's not forget that every treasurer, bookkeeper, or accountant in each company has a different idea as to what should be charged to advertising.

In a recent issue of *Advertising Age*, this question was covered thoroughly in a complete list of industries and their average advertising expenditure. It is notable in this list that the two classifications, drugs and medicines—including vitamins, and perfumes, cosmetics and toilet preparations, were by far the highest. They averaged more than ten times the average of all industry groups and were nearly double that of such widely advertised television and magazine specialties as tobacco and beer.

According to a statement made before the American Dental Association, there are so many cavities in American teeth that, if all the nation's dentists were to start filling today, they wouldn't be finished for two years. It was estimated that there are about 700,000,000 decayed teeth in need of treatment.

We have never seen a report on the total amount of money spent for dentifrice advertising, but surely it will run to a few hundred million dollars over the last few decades.

It is also true that practically every consumer survey made by magazines and newspapers shows that well over 85 per cent of all Americans everywhere are using a dentifrice regularly.

We are not citing these figures to try to establish any connection with the leading statements, because there does not seem to be any connection.

Why do so many new products fail? According to a recent estimate, over 80 per cent of new products never even reach a market; only 8 per cent of the new products that do reach the market become successful; and, out of 100 leading established brands, 30 or so will lose their leadership within five or six years.

There are a great many reasons why a new product fails to make the grade or to hold its position, and these have been outlined in detail many, many times over in many business publications.

A professor of marketing at Northwestern University, Professor Britt, in a new book, "The Spenders," comes up with a new fundamental factor that everybody has always considered, but perhaps never rated in its full importance.

Professor Britt establishes the obvious fact that hardly any family in America has enough money to satisfy all its wants. In addition to that hardly anybody has the time to do all the things he wants to do.

After the great bulk of the middle-class families of America, families having an income range between $3,000 and $7,000 annually, have paid for taxes, food, shelter, clothing, and transportation, the amount of disposable income that remains to be spread over a vast field are considered necessities, luxuries, amusement, and occasional emergencies, just automatically freezes them out as purchasers of countless things they would enjoy buying.

This, according to the professor, is the real competition that American advertising faces, namely, the limited ability to buy.

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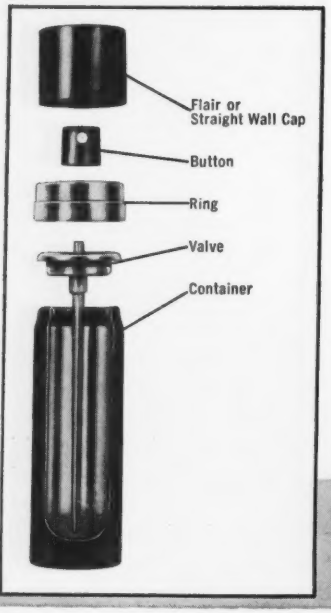

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LOOKS COSTLY TO FINISH AND DECORATE . . . *BUT ARE NOT!*
LOOKS LIKE THEY REQUIRE INNER CONTAINERS . . . *BUT DO NOT!*
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NEWS IN PACKAGING...

1. Max Factor's California Sun Pastels, new matte-finish lipsticks, are featured in a full-color counter merchandiser that holds molded replicas of the six new shades. The display base holds 18 lipstick refills.

2. Coty's new all-in-one makeup, Light and Lovely, is packaged in a convenient, nonbreakable spill-proof plastic tube that prevents contamination.

3. Rayette has introduced Hair Brite and Aqua Net hair sprays in a 35-cent pocket-size Peerless tube. A white plastic overcap by La Barb, fits over the valve and the actuator, both by V. C. A.

4. Genteel, a new baby bath and shampoo by Mennen is available in 6- and 12-ounce unbreakable polyethylene bottles in blue or pink.

5. Packaging Components, Inc., has introduced Satin-Pak, a new cushion-soft material for trays and platforms. It is made from extruded, expanded polystyrene foam, which can be formed in thicknesses to the exact contours of the product to be packaged, providing both protective cushioning and rigid strength.

6. Union Carbide Plastics has a new bottle safety closure designed by Edward J. Towns. It is a two-piece cap with an outer shell of high density polyethylene and an inner shell of styrene-acrylonitrile copolymer.

7. The new Bactine spray dispenser bottle by Calmar contains two screw-on caps. The bottom cap remains on the bottle, while the top cap is removed to release the sprayer. Armstrong designed the compression-molded cap of a thermo-setting plastic three times as strong as a standard cap.

8. An unusual container in the shape of a miniature fire extinguisher is being used by the Norwich Pharmacal Co. to market its new liquid antiseptic pain reliever, Ungentine First-Aid Spray. The plastic squeeze bottle contains 2¾ ounces of medication.

9. Shulton's new Old Spice Super Smooth Shave comes in a can with a larger directional spout for quicker, easier use. It locks in place for safe traveling. A self-service counter unit (not shown) displays 12 cans.

10. J. T. Baker Chemical Company has introduced a new Adjusta-Flow 1-pound container of Baker Analyzed Reagent Hydrofluoric Acid. The rate of flow can be dialed on the container, utilizing calibration marks on the bottle and closure. Included is a slip-on dust cover for protection against contamination or leakage. A dripless pouring lip causes the acid remaining in the closure to flow back into the bottle. The container is molded of polyethylene and is mounted in a reinforcing cardboard sleeve for a firm, safe grip.

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In Aerosol Valves . . .

WHAT'S THE MOST VITAL ELEMENT OF SUCCESS?

Spray head, delivery tube, valve body or housing, gasket, ferrule, spring . . . all play a role in the success of an aerosol valve. How they are individually made, and how they are put together as a unit determine their effectiveness. This is where the most vital element of all is brought into play.

Know-how. It's more than a material part. It's experience, craftsmanship and pride in manufacturing the best aerosol valve. An axiom of quality is the greater the know-how, the better the product. When you buy Newman-Green aerosol valves, you're buying the most vital element of all . . . know-how. Try us soon.

NEWMAN-GREEN *Creative Aerosol Valve Engineering*

151 Interstate Road Addison, Illinois Kingswood 3-6500

1. A new family-sized bottle containing 100 Tums tablets has been introduced by Lewis-Howe Company. This is the first time Tums have been packaged in bulk in a container specifically designed for family use.

2. Monico's new Christmas in July Spray Cologne comes in a 1-ounce glass container with measured sprays. The fragrance's green color is part of the decorative scheme. The containers are labeled in red and gold, and are displayed in a red sleigh, decorated with golden snow-flakes and a frosty white inscription of the fragrance name. Twelve containers are inserted into the diecut slots of the double platform.

3. Poly-Kote, Inc., has developed a vacuum metallized coating for polyethylene that has good adhesion, remains flexible after hundreds of squeezings, and reduces sharply solvent losses through the base material. The bottles can be furnished in most colors and the surface will accept any printing with no pre-treatment.

4. Yardley of London has introduced its fragrance line in a 3-ounce aluminum container by Peerless Tube, decorated by Seri Print. It is equipped with an all-plastic trigger tip by Metal Fabrications and V.C.A.

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Is Convenience a Packaging Asset?

Leland R. Srigley, director of industrial engineering for Parke, Davis & Company, advised the Packaging Association of Canada to evaluate carefully "the benefits of the package change and customer acceptance against the dollar investment," in questioning whether convenience packaging is always as much of an asset as it may seem to be. Mr. Srigley pointed out that, "in the long run, we are selling products—not packages. If the product isn't up to or beyond competitive levels, you won't get volume sales with the fanciest package. The primary requisite is quality." In discussing the packager's responsibility, he said, "We have the responsibility of guarding against over-packaging, with its subsequent increased costs," and therefore of determining whether the end use of the product in question "merits or needs" the convenience proposed.

Cast-coated Boxboard

Interstate Folding Box Company, Inc., has developed a pre-cast clay-coated boxboard for consumer packaging, known as Glosscoat. It is the only on-machine cast-coated boxboard ever made, and is the only one available in colors and in higher calipers, up to 36 thousandths, according to Interstate.

Glosscoat is produced by forming a thin layer of mineral coating composition on a huge chrome-plated drum. This drum is heated; and the coating, which is applied directly to the drum, is rapidly dried as it revolves. The dried clay coating is brought in contact with the paperboard, which has already been coated with a special adhesive mixture. The clay coating on the drum is transferred and permanently bonded to the paperboard by the pressure of a roll against the drum, and then the board is stripped from the face of the drum in completed form. Glosscoat comes in ten colors, plus white, and can be folded up to 180° without cracking or peeling.

Organic Coating for Glass

Bradley & Vrooman Company has developed a new organic coating for glass, Sterikote Series 600, that cuts the production cost of colored bottles and glass containers. The coating is spray-applied and bakes at temperatures ranging from 350° to 550° F. using conventional spray and baking equipment, and requiring only one application without any surface pre-treatment. Results are high-gloss decorative and protective finishes, highly resistant to acids, alkali, detergents, and solvents, and extremely adhesive to glass under humid or wet conditions. The new coating can be supplied in a wide variety of colors for both transparent and opaque finishes. It allows smaller and more controlled quantities of glass to be coated than other methods, and it eliminates furnace shut-down for color cleaning and high temperature bakes.

Furthermore, the Sterikote Series 600 coating increases the impact resistance of the glass, and enhances its appearance.

Technological Advances in Glassmaking

At a recent sales meeting of the Armstrong Cork Company's Packaging Materials Division in Lancaster, Pa., Roger H. Hetzel, vice-president and general manager of the division, said, "We have been changing glassmaking from an art to a science.

"Historically, glassmaking has been a matter of experience, trial and error—in other words, a slowly acquired art," Mr. Hetzel continued. "But it is rapidly becoming more scientific through batch material and process control, accurate temperature and viscosity control, uniform gob shape, size and temperature; improved mold design, refinements in forming machines to make them turn out better bottles more uniformly, extensive instrumentation, development of the use of optics and electronics for inspection, and generally, greater application of the principles of automation."

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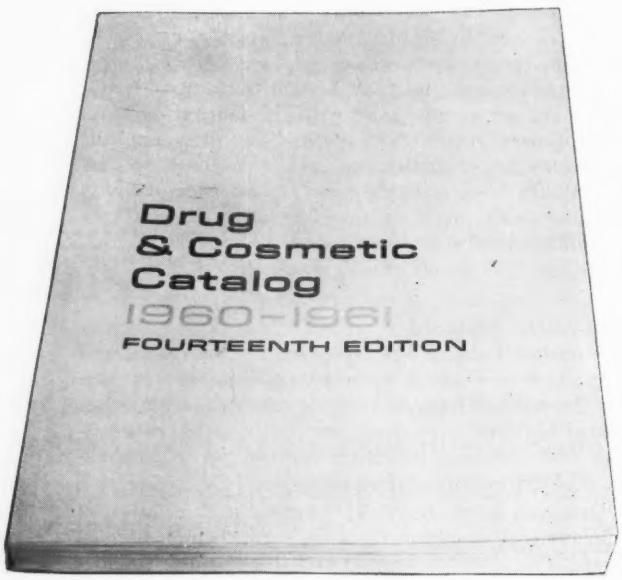
It is invaluable in locating and selecting suppliers of basic materials for established or new products, and is the most complete and comprehensive summary published for this industry.



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NEWS and VIEWS

BY TED KLEIN PUBLIC RELATIONS DIRECTOR*

Shepherd Et Al

Aerosols: Science and Technology, edited by H. R. Shepherd, published by Interscience Publishers, Inc., of New York, 548 pages with an index, is required reading for research and development men in the industry.

Mr. Shepherd, president of Aerodol Techniques, Inc., of Bridgeport, Connecticut, is one of the pioneers in the aerosol industry. With the help of Edward Sagarin as consulting editor, George Fiero, William Knapp, Fred Reed, and Ray Stetzer as advisory editors, Shepherd has gathered together 16 chapters on aerosols.

The subject is covered with notable clarity and economy of words. From the initial historical chapter by Mr. Shepherd, on "Aerosols in Modern Industry," to the Appendix which provides a summary of aerosol shipping regulations, the authors cover almost every aspect of the history, use, problems, and potential of an industry which produced one billion containers last year.

Mr. Shepherd writes of his industry: "It is an industry whose products are contained in glass, plastics, and numerous metals; whose products come forth as sprays, streams, creams, pastes, as well as sprays that become foams; whose packages are small enough to be carried in purse or so large that they cannot be handled by the ordinary consumer; an industry whose products may be formulated to remain on a surface, to fall slowly to the ground, to volatilize selectively, or to remain suspended like a fog, in the atmosphere (a true aerosol, as originally defined)."

It is pointed out that the most successful of the aerosol products have added to existing markets, rather than detracted from the market.

Areas which he expects can yield important markets include "aerosols in the food industry, in paints and other surface coatings, in pharmaceutical applications (both proprietary and ethical), in veterinary use, in general household and cleaning use around the kitchen and bathroom, in cleaners and polishes for furniture, rugs, and shoes, to reduce the difficulties of housework; in large plant applications, for the treatment of belts, machine parts, presses etc., in such cosmetics as nail makeup and hair groom . . ."

With these as suggested areas for new products, the book then provides enough technical and market information for any manufacturer to find a way to consider an aerosol product.

Forthright Statement

Seldom does a firm put forth for all to see a statement of its objectives. Mead Johnson & Company has done just that with the printing of an advertising insert now running in medical journals. This statement, which is directed at the medical profession, is to me lucid and delightfully free from editorial self-praise:

1. To earn an adequate return on invested capital through service in medicine.

2. To see growth in the fields of specialty nutritional and pharmaceutical products.

3. To achieve growth through fundamental research and sound product development of the kind and quality designed to contribute to the advancement of medicine and the public welfare.

4. To provide adequate and trained management talent at all levels as required by the continuous needs of the business.

5. To provide formal training for all employees to promote individual growth and development.

6. To maintain a high level of employee morale through continuous sound leadership and administration.

7. To discharge the obligation of corporate citizenship by effective participation in and contribution to industry, national, state, and local affairs.

Rescue Inc.

Last year there were 9,000 murders in the country. In the same period, about 25,000 individuals took their own lives. According to Rescue Inc., a nonprofit, nonsectarian organization devoted to the prevention of suicide, a lot of these could be prevented.

Recently, Rev. Kenneth B. Murphy, Director of Rescue Inc., wrote this about his work:

"Suicide is more easily preventable than auto accidents or any of the other nine causes of death which were given on the list of the nation's ten worst killers . . . We all need to be loved, to know that we are loved. Without this feeling, life at its best is tasteless; at its worst, frightening to the point of suicide. It is important if someone threatens suicide to listen to him and then to get competent help. Heed such utterance; it can be the manifestation of illness —the desperate illness."

The phone number of Rescue Inc. in Boston is HAncox 6-6600. Here is an idea that certainly provides an outstanding service. We thought that by calling it to your attention, some good might be achieved.

Marketing Seminar at Harvard

The Pharmaceutical Advertising Club of New York is sponsoring an Advanced Seminar for Pharmaceutical Marketing Executives at the Harvard Graduate School of Business Administration in Cambridge, Massachusetts, from June 18 through 24.

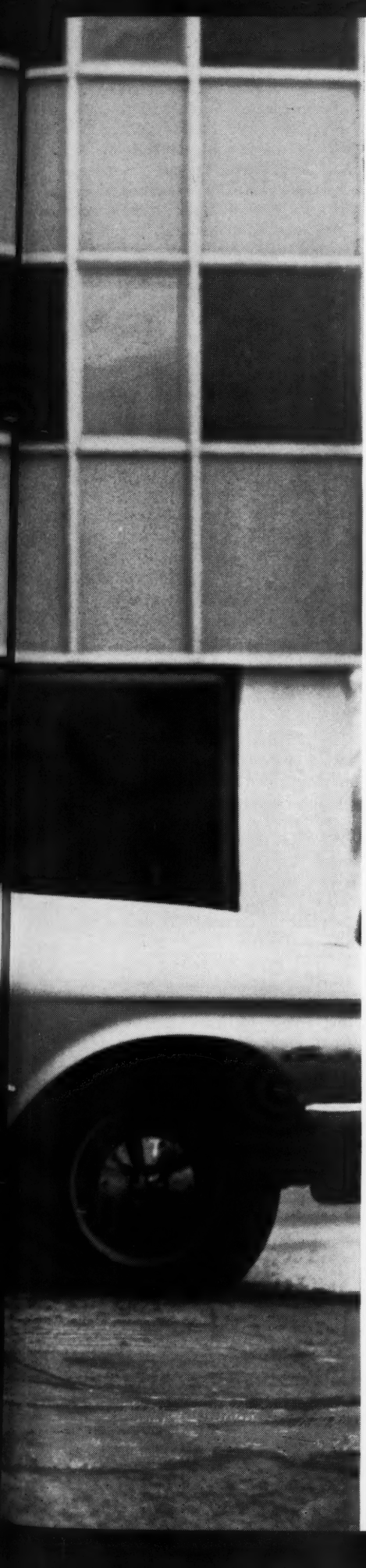
In announcing the program, Dr. Theodore Klump, co-chairman of the Education Committee of the Pharmaceutical Advertising Club said, "Using the well-known case method of instruction, with material drawn mostly from the pharmaceutical industry, several members of the Harvard faculty will lead a limited number of executives in an intensive program designed to sharpen the marketing and administrative skills of the participants."

The Case Method of Instruction, pioneered by Harvard Business School, enables the individual to make his own analysis of a marketing problem, join with others in informal groups to discuss his findings, and then with a faculty member to participate in a formal discussion.

Faculty members who will participate in the program are: Milton P. Brown and John Desmond Glover, Professors of Business Administration; Wesley W. Marple, Jr., Assistant Dean; and Lewis B. Ward, Professor of Business Research.

Enrollment is limited to 80 executives. Complete information can be obtained from the Pharmaceutical Advertising Club, 489 Fifth Avenue, New York City.

*Paul Klemtner & Company, Inc.



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ANCHOR HOCKING

Specialists In Glass Sales-packages

Patents and Trademarks

BY THOMAS CIFELLI, JR., PATENT ATTORNEY*

Don't Jump to Conclusions

Some years ago, in December, 1956 to be exact, we devoted an entire article to a plea for considered judgment rather than the hasty jumping to conclusions as regards interpreting patent claims. It was pointed out that words in patent claims do not always mean what they appear to mean, and in this connection some specific cases which pointed up the hazards in jumping to conclusions were discussed. In one case, the U. S. Supreme Court ruled that *manganese* silicate was an alkaline earth metal silicate within the meaning of this term in the patent in suit. It was shown that even though any chemist, at first blush, would consider that the U. S. Supreme Court made a grave error, because even a high school chemistry student knows that manganese is *not* an alkaline earth metal, if the decision were actually studied and the facts of the case carefully considered, the correctness of the conclusion of the court would be admitted.

However, as much as we may preach not only to others but to ourselves, to guard against forming judgment without all the facts, it appears to be a practical impossibility for us to practice what we preach, the world and its demands being what they are. It is bad enough when we jump to conclusions on matters that do not affect our own interest. What we have to guard against most is "going off the beam" in matters that do vitally affect us, for example, in matters affecting our own livelihood and our competence in it. In this connection, that is why lawyers are reluctant to pass snap judgment on any matter, without giving it the study to which it is entitled.

The reason is not, as laymen may think, because lawyers want to justify large fees. Let us try a test on the reader to prove or disprove one point that snap judgments, even when they appear justified, are liable to lead to error.

Suppose you were told that the well-known Polaroid Corp. lost a suit against Polarad Electronics Corp., to enforce its trademark Polaroid, even though this mark was used by it on television and electronics articles long before Polarad was used in the same field. Would not the reader conclude that a miscarriage of justice had occurred? Certainly, one would say, the two marks are confusingly similar and the goods are in conflict, too.

Let us examine all the pertinent facts, and then the reader can make up his mind.

Polaroid v. Polarad Facts

Polaroid Corp., holds some 22 U. S. registrations granted between 1936 and 1956. The courts have held Polaroid to be a valuable, valid trademark as a coined or inventive symbol and not to have lost its rights to protection by becoming generic or descriptive. It is used in connection with sheet polarizing material as well as optical desk lamps, viewers, and the like. The widest use, of course, is in connection with the Land camera, which use began in 1948.

The Polarad Electronics Corp. engages principally in the sale of microwave generating, receiving and measuring devices, and of television studio equipment. Polarad claimed that it had arrived at its name by taking the first letters of the first and last names of its founder, Paul Odessey, and the first two letters of the first name of his friend and anticipated partner, Larry Jaffe, and adding the suffix "rad," intended to signify radio. However, Odessey did admit that at the time he had some knowledge of the name Polaroid, although only as applied to glasses and polarizing filters and not as to electronics.

Way back in November, 1945, Polaroid learned of the Polarad Company. All the former did was to draw a credit report and have one of its attorneys visit Polarad's quarters, then two small rooms. Polaroid did not protest. By June of 1946, Polarad was advertising television equipment in trade journals. These advertisements and other notices came to the attention of Polaroid's officers, but still nothing was done. Then, in 1950, an attorney who represented Polaroid in foreign patent matters came upon a trade show which displayed Polarad's television products under this name, and informed Polaroid's counsel. The latter advised Dr. Land that "the time had come when he thought we ought to think seriously about the problem." However, nothing was done although Polarad's sales had grown from a nominal amount to a rate of several thousand dollars a year. In October, 1951, Polarad, under its own letter head, forwarded to Polaroid a letter addressed to "Polarad Electronics Corp.," inquiring in regard to "polaroid material designed for night driving;" and there was no protest by the Polaroid Corp. In 1953, Polarad applied to the U. S. Patent Office for registration of its trademark, Polarad, for radio and television units and other electronic devices. Polaroid opposed the registration but the Patent Office denied the protest. Polaroid finally brought suit in 1956, by which time Polarad was spending considerable sums for advertising its business and was growing, employees having increased from eight in the calendar year 1945, to 530 in 1956, and annual sales having increased from $12,000 to $6,048,000.

Contentions of the Parties

Polaroid contended that, even though the bulk of its business was in optics and photography, lines not pursued by Polarad, nevertheless Polaroid was entitled to protection at least in certain portions of the large field of electronics. This contention was based on Polaroid's sales of certain corrector plates used in certain types of television systems, first under government contract beginning in 1943, and then to the industry beginning in 1945, and on its

*Richards and Cifelli, Newark 2, New Jersey.

sale, since 1946, of polarizing television filters which served the same function of the color filters that Polarad supplies as part of the television apparatus sold by it. Polaroid also relied on certain instances of confusion, predominantly communications intended for Polarad but directed to Polaroid.

Against Polaroid's contentions, Polarad argued that its business is the sale of complex electronics equipment to a relatively few customers; that this does not compete in any significant way with Polaroid's business, the bulk of which is now in articles destined for the ultimate consumer; that Polaroid's excursions in electronics are insignificant in the light of the size of the field; that the instances of confusion are minimal; that there is no evidence that Polaroid has suffered either through loss of customers or injury to reputation, since Polarad has conducted its business with high standards; and that the very nature of Polarad's business sales to experienced industrial users and the government, precludes any substantial possibility of confusion. Polarad also defended on the ground that Polaroid was guilty of laches, that is that Polaroid "slept on its rights."

The Court's Views

The court frankly admitted that the problem of determining how far a valid trademark should be protected with respect to goods other than those to which the owner has applied it has long been vexing and does not become easier of solution with the years. Where the products are different the prior owner's chance of success is a function of many variables: the strength of his mark, the degree of similarity between the two marks, the proximity of the products, the likelihood that the prior owner will bridge the gap, actual confusion, whether defendant used good faith in adopting its own mark, the quality of the defendant's product, and the sophistication of the buyers. However, even this catalogue does not exhaust the possibilities, the court said, and other variables may still have to be taken into account. The court conceded that Polaroid is a strong trademark and the similarity between the two names is great. In the court's mind, the evidence of actual confusion was not considered to be impressive. The filter was ruled to be the only case in which Polarad sold a product serving a function similar to Polaroid's.

While the court felt that the main part of Polaroid's business does not conflict with that of Polarad, the court was concerned about the possible confusion because of Polarad's heavy involvement in a phase of electronics that lies closer to Polaroid's business, namely, television. In this connection, the court noted that among the factors that first stimulated Dr. Land's interest in polarization were certain television uses. Therefore, the court said that it was by no means sure that Polaroid would not have been entitled to at least some relief if it had moved with reasonable promptness. However, the court felt that this had not been done and that Polaroid was guilty of laches.

It is interesting to note that the court refused to accept as an excuse for Polaroid's inactivity what might appear to be a sound business consideration, namely, the fact that Polaroid attempted to excuse itself on the ground that Polarad's sales were small at the outset. The court in rejecting this excuse said "that is the very time when the owner of a mark ought forcefully to claim protection." The court went on to say that the scales of conscience and fair dealing will tip far more readily for a plaintiff when a defendant will suffer little disadvantage in changing to another name.

While the court passed over Polaroid's inaction in 1945 and 1946, the court felt that the situation had surely changed by the year 1951, when Polarad made $192,000 in catalogue sales and $356,000 in sales under military contracts. Also, Polaroid itself conceded that by 1952 Polarad had expanded its business from the design and construction of special apparatus on order to include the manufacture and sale of television and other devices operable throughout the entire radio frequency band. Neveretheless, Polaroid waited another four years before bringing suit.

The court, which incidentally is the extremely highly respected U. S. Circuit Court of Appeals for the Second Circuit, which includes New York, did not completely rebuff Polaroid as to future action. In this connection, the court said that if Polarad should move into new territory more closely related to optics and photography, different considerations as to laches as well as on the merits will apply. Nevertheless, it is obvious that the decision greatly weakens the Polaroid trademark, at least insofar as Polarad Electronics Corporation is concerned.

The Readers' View

Now, does the reader have the same opinion that he doubtless had before the facts were considered?

Expanding Overseas at No Cost

The world seems to have gotten far smaller for everybody except the small business man. Large companies have been setting up foreign operations through subsidiaries at an increasing pace since World War II, and particularly since the European Common Market and Outer Seven came into existence. Contact with foreign countries on the individual or tourist level has recently been given great impetus by jet planes. On the other hand, competition from overseas has also increased, for the small business man as well as for others. Among the reasons are the strengthened economies in foreign countries as well as larger imports into the U. S. A., for example, from Germany and Japan.

When one considers that the growth rates of the countries outside the U. S. A. have for some time materially exceeded the growth rate of the U. S. A., expansion outside the U. S. A. is indeed a temptation. The question is whether the small business man can do anything about it. It is out of the question in most instances for small business men to do anything that involves so substantial a capital investment as a foreign subsidiary would require.

There is an instrument, however, which may well enable the small company to do something. It is what may be called a technical license agreement. Income under this type of agreement can be had in the form of royalties for know-how and the licenses of patent and trademark rights. Incidentally, even in those countries having restrictions against the exportation of money, such royalties are usually exempt.

The technical license agreement also has other advantages. In this day of growing nationalism, it is

(Continued on page 668)

(*Continued from page 589*)

Should temperatures not reach predetermined levels, all strain would not be eliminated from the glass and the ampules and vials would not meet the rigid polariscope tests that follow.

The previous method of annealing ampules and vials with flame burners did not provide the temperature control and uniformity necessary. Hot spots and cold spots often developed. Considerable production time was lost on re-runs. Rejects were high.

With the precision of the heating method now in effect, however, close control and uniformity of heating has been assured. Moreover, time-consuming re-runs and costly rejects have been eliminated. A look at the principles of Gradiation heating explains why.

The radiant heat from the burners is created by burning closely-controlled gas-air mixtures against specially grooved and contoured, cup-shaped refractory surfaces (see FIGURE 4). The surfaces become incandescent and beam radiant heat uniformly to the ampules and vials, just as a floodlight would cast light uniformly over them, without harmful hot-spot flame impingement. Combustion is completed entirely within the cup.

This combination of the high thermal head and close proximity of the heat source to the glass ware makes faster annealing cycles possible, adding to the production hours saved by elimination of re-runs.

Accuracy of temperature control in the heating system is further assured through the maximum combustion efficiency provided by two Selas Combustion Controllers (FIGURE 5), which are used alternately to supply the entire line of lehrs with fuel. The Combustion Controller, heart of the combustion system, takes natural gas from the low-pressure plant line, draws air from the room, mixes the two in precise ratio, and compresses the mixture to several pounds of pressure for delivery to the burners.

After three minutes of exposure to this accurately controlled heat, the glass workpieces enter the controlled-cooling zone. Passage through this zone, where temperatures of the glass pieces are brought down gradually to a safe level for exposure to room air, takes only seven minutes—a total of ten minutes in the lehr for each glass piece.

As the workpieces emerge from the exit of the lehr, they are inspected by an operator under a low overhead light for imperfections and gage correctness. They are then subjected to a second and more rigid inspection, including examination under a polariscope, by quality control experts. Any unsatisfactory glass piece is carried to the end of the conveyor and dropped into a metal reject chute. This connects with a conveyor under the floor, which removes broken

(*Continued on page 618*)

GC

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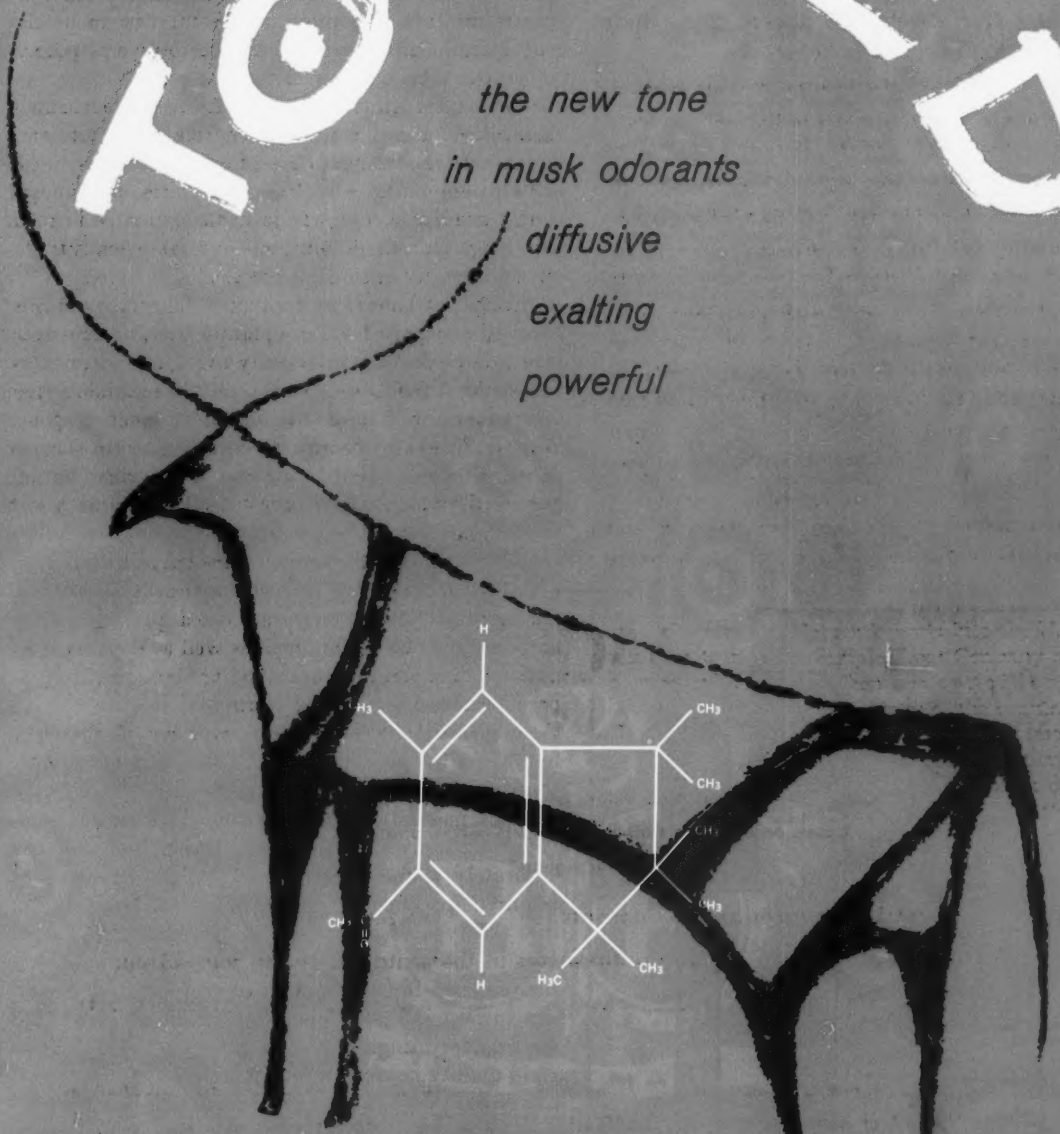

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AMEKINE (Oil-Resisting) synthetic rubber bulbs are recommended for use with oil products.

CALIBRATIONS can be applied on either glass or plastic droppers.

No. 1. Non-rolling, extra-depth Bakelite cap; thick flange rubber bulb; Saftee ball glass.

No. 2. Non-rolling, extra-depth Bakelite cap; thick flange rubber bulb; special bent glass (CALIBRATED IN COLOR).

No. 3. Regular plastic cap; thin flange rubber bulb; plastic dropper (or glass).

We can give prompt service on your special requirements for large or small quantities of droppers made from glass or plastic and in special packaging such as cellophane-wrap. Write for samples and prices.

No. 4. Metal cap; oil-resisting Amekine synthetic rubber bulb; blunt glass (or plastic).

PENNSYLVANIA GLASS PRODUCTS CO. INC.

428 N. CRAIG ST.

PITTSBURGH (13), PA., U.S.A.

(*Continued from page 616*)

parts, trimmings or waste glass, and rejects from the building.

Following the annealing operation and inspections, ampules that require no printing on them and vials are packaged for shipment. Ampules that require printing are taken to a 46-foot lehr at the end of the annealing line. Here an operator removes the cardboard and corrugated strips from the ampule box and empties the ampules into an automatic feeder. This unit automatically feeds the ampules into a screener, where the label is applied to each glass surface by silk screen printing. The ampules are then automatically dropped onto fixtures on the conveyor, which carries them into the lehr, to fuse the printing into the glass.

The heating section at the front of this lehr is 26 feet long. Duradiant burners are strategically patterned along both sides of the lehr and individually controlled, as shown in FIGURE 6. The burners are adjusted precisely for a gradual increase of temperature to a peak point of slightly over 1200° F. at the mid-point of the heating zone, and a gradual decrease of temperature towards the end of the heating zone. Temperatures are accurately controlled by the special instrument panel board shown at the extreme left of Figure 6, which takes care of all steps, as well, throughout this entire operation.

Close control of the temperature curve in this lehr is just as important as it is in the annealing lehrs, if not more so. The correctly annealed qualities of the ampules must be maintained, as well as the shape. In addition, temperatures must be brought precisely to predetermined levels and controlled to within ±5° F., or the silk screen printing will not be properly fused into the glass to meet the even stricter quality control tests that follow this operation.

Quick passage through the controlled heating zone (approximately 1½ minutes) brings the ampules accurately to the desired 1180° F., the temperature required for effective fusion of silk screen printing into the type of glass used. After another 1½ minutes in the controlled cooling zone, 3 minutes total time in the lehr, the ampules emerge (FIGURE 7) and are inspected by an operator for clean, clear, unsmeared printing. They are then packaged for the rigid quality control tests that follow.

The former flame-burner method employed proved even more costly in this operation than it had in the annealing lehrs, because of the strict quality and reject policies and ruling against re-runs, and because at this point all work has been completed on the pieces.

Gradiation heating has eliminated printed ampule rejects, however, at the same time that it has doubled the production speed of this process.

In addition to the economies of an increase in production and the elimination of rejects in these two

(*Continued on page 622*)

Bertrand Freres

Les Plus Belles Essences

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USE CENTURY BRAND
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(Continued from page 618)

ampule and vial heating operations, the use of Gradiation heating methods has also more than doubled the life of the conveyor belts used in the 19 annealing lehrs. Belts used to last only six months, then needed replacement. In the little over one year that the radiant heated lehrs have been in operation, not one conveyor belt has shown the slightest need for replacement.

Not a single lehr has been down for repairs, either, despite the heavy 18-hour and 24-hour schedules of the plant.

Speed of heatups is still another advantage, and a big fuel-saver, which is being realized with radiant heating, each lehr requiring only 12 to 15 minutes to bring it up to 1200° F. from room temperature.

O.T.C.—ETHICAL OR PROPRIETARY?

(Continued from page 586)

by physicians, the Squibb name was not used in advertising. However, this pretense has now been dropped. Squibb's Vigran vitamins are currently being promoted with an annual budget in excess of $1,000,000, including substantial expenditures for television time. Squibb also has stated that it has tentative plans for other proprietaries.

Upjohn Co.—The Kalamazoo ethical drug giant has been toying for some time with the idea of "going consumer," and a decision is now imminent. Last year Upjohn invited five advertising agencies to make presentations on how they would tackle the job of promoting Unicap vitamins to the consumer. One of these agencies, the McCann-Marschalk Co., was finally selected to explore this area further.

Smith Kline & French Laboratories—Here is a company that has long been one of the most profitable operators in the ethical drug field—and it, too, is thinking of entering the proprietary field. SK&F made its first step in this direction last year when its Canadian subsidiary set up a division, Franklin Laboratories, to market proprietaries. In the U. S., SK&F has now retained Foote, Cone & Belding, one of the leading consumer advertising agencies, to investigate this area for it and make recommendations.

Chas. Pfizer & Co.—Pfizer has dabbled in proprietary preparations for many years but it has been a halfway house. The products, principally Candettes antibiotic lozenges, have been promoted on television and radio with a limited budget—it has never been more than six figures. Pfizer has never embarked on an all-out campaign to push these drugs, the way it has abroad. Also, the company has been careful to avoid all mention of the Pfizer name in its consumer advertising. Up until 1961, these products were promoted through a unit of Pfizer Laboratories. Now the company has set up a separate division, Labaron Pharmacal, to handle proprietary marketing, and this may presage a stepped-up effort in this field.

Abbott Laboratories—One of the big names in the ethical field, Abbott has one consumer product in its sugar substitute, Sucaryl, which carries a hefty advertising budget. There have been persistent reports that Abbott has a major consumer marketing project in the works, but there is no tangible evidence of it as yet. The company has admitted to stockholders that its vitamin sales are declining steadily.

Mead Johnson & Co.—This is, of course, the Metrecal story. The weight control product has made Mead Johnson a major consumer advertiser, with an ad budget of $10,000,000, and this experience has been a prime factor in motivating other ethical drug producers to think more seriously about marketing products directly to the consumer. Mead Johnson had to face the problem that worries all ethical drug companies: What will physicians think about our advertising over their heads to the consumer? Mead Johnson solved it by creating a new division, Edward Dalton, to market Metrecal, although the corporate name has received prominent exposure.

Many O-T-C products have achieved a respectable volume with little or no advertising. Burroughs Wellcome's Empirin, for example, is an analgesic with a steady volume. White Laboratories' Aspergum and Merck, Sharp & Dohme's Sucrets lozenges are also modest but profitable items. Perhaps the most outstanding example of a successful O-T-C product is Coricidin, the antihistamine-APC compound developed by Schering Corp.

Schering introduced Coricidin as a prescription product in 1949. It became an over-the-counter drug in 1951 and companion products were added in 1953. In 1950, Coricidin had a volume of about $600,000. In 1959, Coricidin sales were $7,000,000 and the entire Coricidin line had a volume close to $10,000,000. The product had thus achieved wide use as a cold remedy without substantial expenditures in advertising. This encompassed advertising to doctors and pharmacists, plus displays in drugstores. Contrast this with the massive amounts of advertising used to promote cold remedies like Dristan and Super Anahist. Dristan was introduced with a budget equal to Coricidin's total sales volume. This produced $30,000,000 in sales for the manufacturer. Schering's profit on Coricidin was probably better, but remember this: It took nine years to build up a $10,000,000 volume for Coricidin. Dristan got $30,000,000 in its first year out.

In the opinion of many observers, the company that has this problem of proprietaries vs. ethicals neatly licked is American Home Products Corp. AHP is a corporate shell holding a number of separate entities. On the one hand, Whitehall Laboratories attacks the consumer on a broad front with advertising for Anacin, Dristan, Preparation H, Sleep-Eze and BiSoDol. On the other hand, Wyeth Laboratories and Ayerst Laboratories market a wide line of ethical

(*Continued on page 636*)

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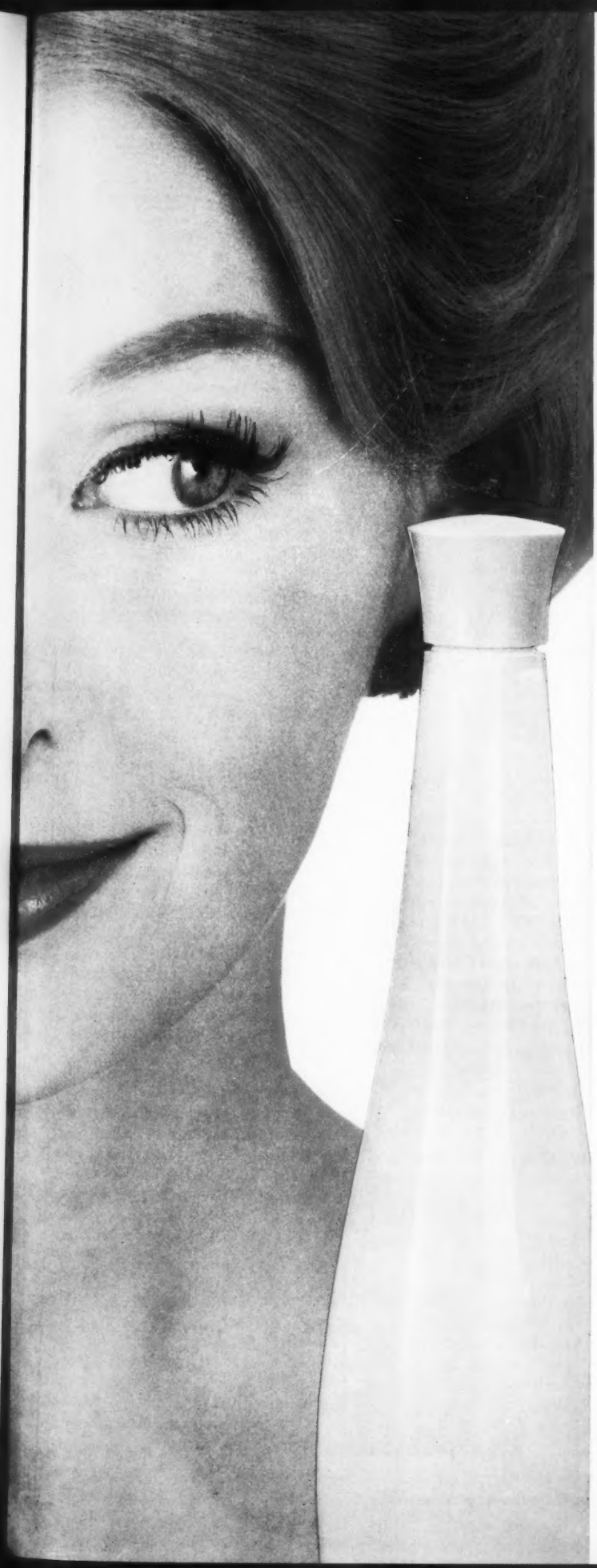

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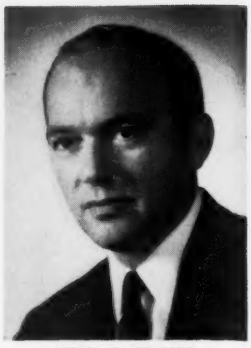

ALFRED E. BROWN

NEWS...

Appointments and Promotions

John L. Gushman, formerly vice-president of Owens-Illinois Glass Company and president of Owens-Illinois International, has been elected president, chief operating officer, and a director of Anchor Hocking Glass Corporation. **Wiliam V. Fisher,** president for the past 17 years, was named chairman of the board and chief executive officer of the corporation; and **I. J. Collins,** chairman of the board since 1944, was elected chairman of the executive and finance committees. Mr. Collins was the founder of the company preceding Anchor Hocking.

Mr. Fisher joined the Hocking Glass Company in 1919, becoming president of Anchor Hocking in 1944. He is president and a director of The Standard Glass Manufacturing Company, and a director of Anchor Cap & Closure Corporation of Canada, Limited, and of Carr-Lowrey Glass Company.

Mr. Collins and seven associates raised the capital with which the Hocking Glass Company was organized. He served as president of the company until 1944. Mr. Collins is also chairman of the board and a director of Standard Glass and of Carr-Lowrey, and a director of Anchor Cap & Closure Corp. of Canada.

Paul Bremer, formerly general manager of Christian Dior Perfumes Corporation, has been elected president of the American company. Mr. Bremer has been with Christian Dior Perfumes since 1958.

The new post of executive vice-president of Faberge Inc. has been filled by **Philip Brass,** formerly vice-president in charge of plant management. Mr. Brass has been with the company for 21 years.

Dr. Alfred E. Brown, former vice-president, has been elected president of Harris Research Laboratories, Inc., independent subsidiary of The Gillette Company. He remains director of research of the company, which he joined in 1945.

Josiah K. Lilly has been elected chairman of the board of Eli Lilly and Company. He succeeds his brother, **Eli Lilly,** who, having served in that position for 13 years, is now honorary chairman. J. K. Lilly joined the company in 1914; after serving in several executive positions he became the first president of Eli Lilly International Corporation in 1943. A year later he also assumed duties as executive vice-president of the parent company. He served as president of Eli Lilly and Company from 1948 to 1953 and has been vice-chairman of the board since 1953. **Lot Green** and **Raymond M. Rice, M.D.,** were elected new members of the board of directors. Both were elected officers of the company last year, Mr. Green as vice-president of engineering, and Dr. Rice as vice-president for medical affairs. **Wayne W. Hilty** has been advanced to the position of assistant director of the quality control division. He has spent 24 years in analytical work for Lilly.

Dr. C. W. Hinman has been appointed technical director of the Research Laboratories of Pitman-Moore Company, a division of The Dow Chemical Company. Dr. Hinman, who will be responsible for pharmaceutical research, has been transferred to the Indianapolis drug firm from Dow's Agricultural Chemicals Research Department, where he served most recently as coordinator of agricultural chemical synthesis. Dr. Hinman has also been active in Dow's pharmaceutical research.

Mallinckrodt Chemical Works has appointed three officers: **Harold A. Brinner,** treasurer and controller, is now a vice-president; he will continue to serve as treasurer. Succeeding Mr. Brinner is **Frederic M. Mead,** who had been assistant controller since he joined the firm in 1958. **G. C. Bradshaw,** general purchasing agent, was named to the additional post of assistant secretary.

Dr. Robert C. O'Neill has been elected vice-president and appointed director of research and development for Cooper, Tinsley Laboratories, Inc. Dr. O'Neill formerly was with Stauffer Chemical Company and Merck and Company, Inc.

John R. Edmonds has been appointed director of production for Allied Chemical's General Chemical Division. With the division 21 years, Mr. Edmonds has been product manager for a group of industrial and agricultural chemicals for the past three years. **Actor H. Patton** has been appointed director of product development for the division, where he has been 32 years, as manager of product development for the past 11 years.

John S. Brennan has been appointed manager of marketing development for Baxter Laboratories, Inc. Before joining the company in 1959, Mr. Brennan had been vice-president of sales for Taylor, Harkins & Lea. **G. Murray Thelin, Ph.D.,** has been appointed superintendent of product development for Hyland Laboratories division. He will be engaged primarily in protein research. Prior to joining Hyland, Dr. Thelin was with the department of pathology of the University of North Carolina. **Ellis B. Anderson,** formerly a law partner in the firm of Butt, Bowers & Anderson has joined Baxter's legal department.

PAUL D. BLACKMAN

CHARLES J. ARNOLD

C. B. HOWELL

LUTHER S. ROEHM

Three leading fragrance corporations, Parfums Givenchy, Inc., Parfums Millot, Inc., and the Paul D. Blackman Corp., have been acquired by Genesco Inc., manufacturer and retailer of apparel and footwear. **Paul D. Blackman** has been named president of the House of Fragrance, Inc., a new cosmetics corporation, to be operated as a Genesco subsidiary. In addition to the three companies, the new subsidiary will include the wholesale cosmetics division of Henri Bendel, Inc., a Genesco division.

Charles J. Arnold has been named executive vice-president and general manager of Lilly Dache Cosmetics Inc. **Joel L. Strauss** has been appointed to serve as vice-president in charge of marketing. Mr. Arnold, formerly vice-president and sales director of Lanolin Plus, has spent many years in management and sales, exclusively in the cosmetics and toiletries industry. Mr. Strauss was former vice-president of marketing and sales for Parfums Philippe Lalo and prior to that served on the sales staff of Faberge Perfumes and Juliette Marglen.

C. B. Howell has been named vice-president and general sales manager of the A. H. Robins Co., Inc. Mr. Howell was a retail drug store owner and operator before he became a Robins medical service representative in 1947.

Dr. Luther S. Roehm has been elected vice-president for marketing of the Merck Chemical Division of Merck & Co., Inc. Dr. Roehm was formerly a vice-president of the A. E. Staley Manufacturing Co.

Robert O. Davison has been elected vice-president of the Kelco Company, where he has been since 1934. Dr. Davison has also recently been re-elected to a second term as president of the Dairy Industries Supply Association. He will also continue as manager of Kelco's Eastern Division.

Harry Fields has been appointed area manager in South America for International Flavors & Fragrances Inc. He has been associated with the company for 13 years. Mr. Fields' new responsibilities include supervision of the IFF manufacturing subsidiaries in Brazil and Argentina, as well as company activities in several adjacent countries.

Xavier Givaudan, son of Andre Givaudan, has returned to Europe after spending six months with the Givaudan organization in New York and visiting its branch offices throughout the United States. He will join the management of L. Givaudan & Cie., Paris.

John W. Hoskins, formerly with the F. B. Redington Company, has been appointed Chicago branch manager of Arthur Colton Company. The company's new West Coast branch will be in charge of branch manager **W. A. Doepel,** who has been associated with the company in Detroit for the past nine years. The new branch is located at 9426 Santa Monica Blvd., Beverly Hills, Calif. **Lawrence A. McDonald** has been appointed general sales manager. He was formerly vice-president and general manager of Super Tool Company.

Stepan Chemical Company has announced the resignation of **Dr. David B. Hatcher** as executive vice-president. Dr. Hatcher plans to remain in the chemical industry in noncompetitive fields. **C. Bruce Brown,** mechanical engineer, and **Dr. Ralph Fredrickson,** chemical engineer, have been appointed to the company's special projects group. Mr. Brown was formerly executive vice-president of St. Paul Ammonia Products Inc., and Dr. Fredrickson, director of engineering research at A. E. Staley Mfg. Co.

ROBERT O. DAVISON

HARRY FIELDS

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C. J. Gutman has been appointed sales manager of the newly created Kings Men Division of Helene Curtis Industries, Inc. Since 1956, sales and marketing direction of Kings Men had been combined with that of Lentheric toiletries, in a joint division known as Lentheric-Kings Men. **William C. Bailey** continues as sales manager of the Lentheric Division.

George Goldenberg has been appointed sales manager of the recently formed Clark-West Division of Syntex Laboratories, Inc., established to manufacture and distribute nonhormone ethical specialties. Mr. Goldenberg joined the Syntex sales department in 1957.

Robert S. Haley has been appointed sales manager of the Vopcolenc Division of Emery Industries, Inc. For the past three years, Mr. Haley had been handling sales in the New York-New Jersey area for the Organic Chemicals Division in Cincinnati.

George N. Stuart has been appointed plant manager of Plume & Atwood Manufacturing Company in Thomaston, Conn. He was recently associated with Seymour Manufacturing Company where he was works manager. **Cornelius L. Hudak** has been promoted to general sales manager. He has been with Plume & Atwood since 1949.

Five organizational changes in the sales structure of the Heyden Chemical Division of Heyden Newport Chemical Corporation have been announced: **F. A. Degener** has been appointed director of marketing; **W. C. Deakyne, Jr.,** is now general sales manager; **James Claypoole** is field sales manager; **E. L. Barkley** has been appointed manager of sales development, and **E. M. Vogel,** district sales manager, New York, and New Jersey. F. A. Degener has been associated with Heyden since 1930. He was previously general sales manager. Mr. Deakyne, with the company since 1951, was formerly assistant general sales manager. Mr. Claypoole has been with the corporation since 1946 as district sales manager. Mr. Barkley, with Heyden since 1948, was most recently product sales manager of organic intermediate chemicals for the Chemical Division. Edward M. Vogel joined the corporation in 1953. He was a sales representative in the Chicago office until 1958. Since then he has been manager of the corporation's Houston district office. **Theodore H. Risch** has been appointed general sales manager of the Newport Industries Division of Heyden Newport. Formerly field sales manager, Mr. Risch has 14 years of service with Heyden Newport.

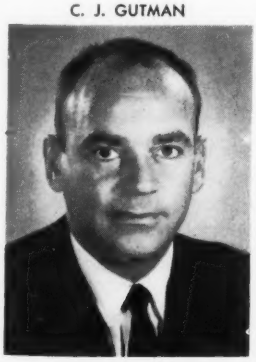
James W. Newman has been elected to the newly created position of vice-president—planning and finance of Lehn & Fink Products Corporation. Mr. Newman was formerly secretary and treasurer of the corporation. He joined the company in 1926 and has been a director since 1947. **James W. Fay,** formerly assistant treasurer, was elected treasurer; and **Frederick Moeller,** formerly assistant secretary, was elected secretary of the corporation. Mr. Fay joined Lehn & Fink in 1958, after having been treasurer of Reaction Motors, Inc., Corporation. Mr. Moeller has been associated with the company for 35 years. **Mil S. Ilich** has been appointed area marketing manager of the International Division. He had been manager for the British Commonwealth area markets of the International Division of Warner-Lambert Pharmaceutical Company.

Richard C. Fenton and **William Dechert** have been appointed operations vice-presidents of the International Subsidiaries of Chas. Pfizer & Co., Inc. Mr. Fenton, with the company 10 years, wil have New York headquarters responsibility for Canada, Europe, Africa, and the Near and Middle East, to and including Iran. Mr. Dechert will be in charge of all Pfizer International operations in the Western Hemisphere from Mexico southward including South America, and in Asia and the Far East from Afghanistan to the Pacific Ocean. He joined the company in 1953. **Julian Claitman** district manager in Los Angeles, Calif., has been promoted to the position of Atlantic regional manager for Pfizer Laboratories. **Parker A. Reische, Jr.,** has been promoted to the staff of the assistant general manager. Mr. Reische, who has been serving as district manager in San Diego, will transfer to New York.

John M. Burnard has been named director of International Operations for Lanolin Plus, Inc. He previously served as director of marketing, Miles Laboratories Pan American Inc. Prior to that he was associated with the Beecham Group Ltd. of London, England, as export sales manager for their U. S. company.

Wyeth International, Ltd., has made four major executive appointments. **Raymond B. Osborne,** former manager of the Far Eastern Division, has been made director of operations for Asia, a newly created position. **Jaap Kelderman,** formerly regional field manager for the Middle Eastern Division, is now assistant director of sales, also a new post. **Louis S. Hernandez,** former assistant to the director of sales, has been named assistant to vice-president Maurice L. Clancy, and **Robert E. Brubaker** is assistant director of op-

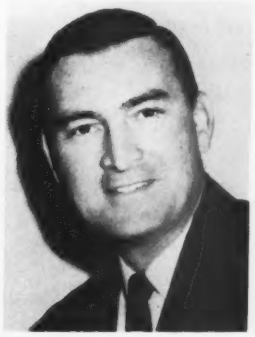
C. J. GUTMAN

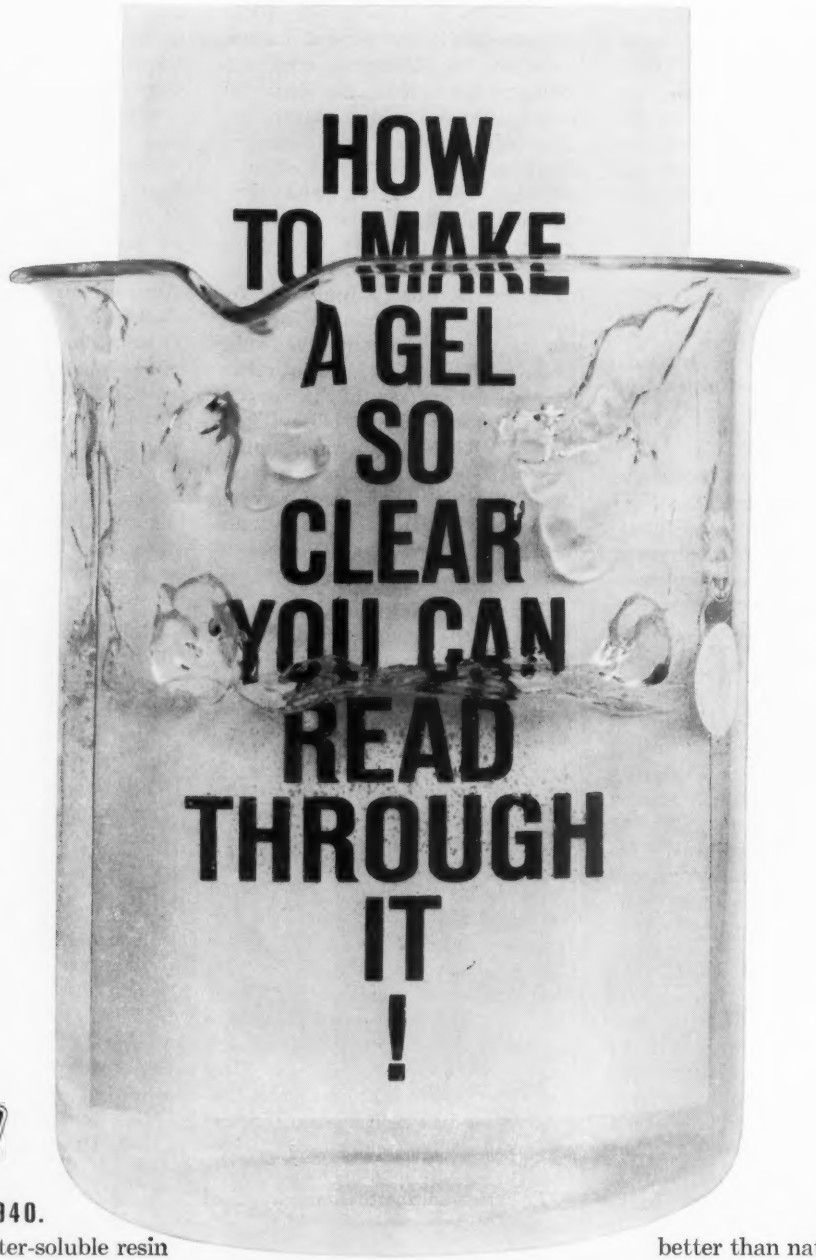


GEORGE GOLDENBERG

ROBERT S. HALEY

CORNELIUS L. HUDAK





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erations for Asia. He continues to supervise all phases of Wyeth activities in the Middle East. Mr. Brubaker joined Wyeth International in 1960, after serving as manager of the European department for McNeil Laboratories.

The Armstrong Contracting and Supply Corporation has elected two vice-presidents: **J. S. Taylor,** district manager of the Atlanta office, and **A. P. Tingle,** district manager in New York. Both will also continue in their present positions. Mr. Taylor has been with the company since 1940, Mr. Tingle, since 1925.

Maurice H. Huitric has been appointed general manager of Revlon S. A., Paris. Mr. Huitric was formerly general manager of the New York City branch of Parfums Lancome S. A., Paris.

Four executive promotions to newly created positions have been made by Chesebrough-Pond's Inc. **Albert M. Andersen** is now controller of the Domestic Division and continues as assistant treasurer. **John F. Ritchie,** assistant treasurer of the International Division for the past two years, has been made controller of the division. **Robert J. Pritchard** and **Donald G. Wiesen** have been promoted to assistant controllers. Mr. Pritchard joined the company in 1957 as chief accountant. Mr. Wiesen joined Chesebrough-Pond's in 1958, and was named assistant controller of the company's Prince Matchabelli Inc. subsidiary in 1959, a position he will retain.

Catherine Burke, purchasing agent of Helena Rubinstein, has retired after 39 years with the company.

Alex Sahagian-Edwards, M.D., has joined Ayerst Laboratories, as assistant medical director. Prior to his appointment, Dr. Sahagian-Edwards was a volunteer physician on S. S. Hope in Indonesia. From 1956-1958, he was a research associate of the American Medical Association's Subcommittee on Breast and Genital Cancer.

Raymond E. Scharmach has joined Miles Laboratories, as assistant director of the quality control laboratories. Mr. Scharmach was formerly with Strong Cobb Arner, Inc., as associate technical director.

Shown left to right: Dr. Austin Smith, president of the Pharmaceutical Manufacturers Association, who was the speaker at the annual Pharmacy Congress, held recently at St. John's, Jamaica, N. Y., campus; Dr. Andrew J. Bartilucci, dean of St. John's College of Pharmacy; and Rev. Mark J. Mullin, C.M., executive vice-president of St. John's University.

Paul Martersteck has been appointed to the newly-created position of West Coast sales manager for Celon, plastic screw cap and plastic tube operations for the Thatcher Glass Manufacturing Co., Inc. At the same time **Thomas Foley** was named assistant to Mr. Martersteck. **Timothy W. J. Costello,** marketing veteran in the packaging field for the last 25 years, has been named San Francisco branch manager for Thatcher Glass. The branch office will be located at 2452 Alameda Street, San Francisco. Mr. Costello has been with Thatcher for the past five years, and for 13 years prior to that, was employed by Reynolds Metals.

Harold E. Huber, Jr., has been appointed to the new position of sales development manager for Votator equipment for Girdler Process Equipment Division of the Chemetron Corporation. Mr. Huber joined the company in 1944.

Reheis Company, Inc., has appointed **George R. Wiley** as biochemist. Mr. Wiley previously served as production superintendent and staff assistant at Wilson & Company, Inc. **Charles H. Robertson,** formerly sales manager of Mallinckrodt Chemical Works, has joined the Reheis sales staff.

Richard W. Routsong has been named assistant sales manager for Crookes-Barnes Laboratories, a subsidiary of Chemway Corporation. Mr. Routsong was national sales manager for the Iso-Sol Company, until its recent purchase by Chemway. The Iso-Sol products are now being marketed by Crookes-Barnes.

Fries and Fries Inc. has appointed **Albert O. Daniels** special sales representative, New York City. Mr. Daniels had been with R. D. Webb & Co. nearly 20 years.

Lawrence J. Kelly has been appointed a technical representative in the Metropolitan New York region of Union Carbide Company, Division of Union Carbide Corporation. Mr. Kelly will be responsible for the sale of Bakelite brand vinyl, phenolic, and epoxy resins, and compounds for bonding, laminating, and coating applications.

William Heffron, Jr., has been appointed plant manager for Puritan Aerosol Corporation. He was formerly in charge of Revlon's Aerosol Filling Division.

R. P. Scherer Corporation has appointed **Morrell A. Nunn** as manager of its Pharmaceutical Products Division, a newly created post involving responsibilities in the sales and marketing of vitamin and medicinal products.

Rutgers' lecturer, Steffan Arctander, presents his new book *Perfume and Flavor Materials of Natural Origin,* dedicated to Rutgers University for its programs in perfumery, to Dr. Mason W. Gross, University president. Watching are Dr. Ernest E. McMahon, dean, University Extension Division (left), and Dr. Peter A. van der Meulen (right), director, School of Chemistry.

CYANAMID ADDS "SECURITY" TO YOUR FORMULA. When your bulk materials come from Cyanamid Fine Chemicals Department you know that quality and dependable performance are consistently high and will never be compromised for unrealistic low-cost production. You are secure in the knowledge that final formulation will provide purity and potency exactly as desired, and consistent from one production lot to another. If the need arises for specialized advice on problems ranging from shelf-life stability to the specific "how" of developing new product markets, the skill and experience of our more than 30,000 employees is always at your disposal. Vitamins, sulfonamides, antibiotics, non-inhibitory intrinsic factor concentrate, other bulk pharmaceuticals and cosmetic chemicals. Complete custom synthesis service.

CYANAMID **AMERICAN CYANAMID COMPANY - FINE CHEMICALS DEPARTMENT / Pearl River, New York.**

Dr. Hyman Henkin has been appointed manager-product development for skin and hair products in the Colgate-Palmolive Company's research and development department. Prior to the recent realignment of the company's research and development departments, Dr. Henkin had served as manager of skin products research in the Toilet Articles Division's research department. **Jack V. Schurman** has been appointed manager-product development for oral products in the research and development department. **Paul H. Lelong,** formerly a perfumer with Firmenich & Company for seven years, has been appointed to the perfumery staff. **Dr. Richard S. Turse** has been appointed to the research department of the Colgate Pharmaceutical Laboratories Division. From 1956 to 1958, Dr. Turse served as an instructor at the New Jersey State University.

Richard Sciarini has been appointed head of the department of control of the Warren-Teed Products Company. Mr. Sciarini's previous experience has been in quality control, the surgical products division of American Cyanamid Corporation, and as production manager of the surgical suture division, Ohio Chemical and Surgical Equipment Company.

Crown Cork & Seal Company has appointed **W. Howard Winters** as regional manager—mid-western region. Mr. Winters has had 20 years of marketing and sales management experience in the packaging industry. He will be responsible for the sale of Crown's line of cans, closures and packaging equipment in Michigan, Indiana, Ohio, Kentucky, North and South Dakota, Nebraska, Minnesota, Iowa, Wisconsin and Illinois. His headquarters will be the company's new sales offices at 5235 West 65th Street, Chicago.

Two appointments to the microbiology staff of the Squibb Institute for Medical Research have been announced: **Dr. Sten Gatenbeck** has been appointed a senior research microbiologist. Born and educated in Sweden, Dr. Gatenbeck was in the Wenner-Grens Research Institute in Stockholm as an organic chemist carrying out research in the synthesis of radioactive compounds from 1952 to 1957. **Dr. Hamilton de Lisle King,** appointed a senior microbiologist, was born in Barbados, West Indies. Dr. King has worked for the Canadian Department of Agriculture as a bacteriologist and also lectured at McGill University. **Wesley J. Harju** has been appointed merchandising manager of E. R. Squibb & Sons. He was formerly with J. B. Williams Company as assistant general sales manager.

George A. Spiro has been named manager of the baby and orthopedic products plant at Johnson & Johnson's eastern surgical dressings operation. Mr. Spiro joined J & J in 1945.

Bemis Bro. Bag Company has transferred **Walter P. Conway,** sales manager of its plastic package plant, to the position of national sales representative for its newly acquired subsidiary, Air-Formed Products Corporation. **Shelby W. Brown, Jr.,** a Bemis sales representative in Florida, will succeed Mr. Conway as sales service manager.

Walter J. Gerry has been appointed treasurer-controller of J. T. Baker Chemical Company. Prior to joining Baker, Mr. Gerry was associated with Charles Pfizer and Company and, most recently, was assistant controller and assistant treasurer of National Starch and Chemical Corporation.

Hugh J. McNelis has been appointed a sales engineer in the Philadelphia office of De Laval Separator Company's Industrial Division. He had been with Simplex Valve & Meter Company.

Torino Returns to Europe

Fernand Torino, chief perfumer of Companhia Brasileira Givaudan,

FERNAND TORINO

Sao Paulo, Brazil, has recently completed a visit with The Givaudan Corporation in the United States on his return trip from Europe, where he visited Givaudan facilities in France, Switzerland, and England. His purpose was the closer coordination of perfumery research and development between the American, Brazilian, and European creative perfume laboratories, an aspect of the program of cooperation between the branches of the world-wide Givaudan organization.

Dr. Bettylee Hampil Retires

Dr. Bettylee Hampil, director of virology of the Merck Sharp & Dohme Laboratories and associate director of the Merck Institute for Therapeutic Research, has retired.

BETTYLEE HAMPIL

She joined the company in 1936 as a bacteriologist, and has since made substantial contributions to the development of the Salk polio vaccine, influenza vaccine, and other important biological products.

Arthur Johnston Retires

Arthur E. Johnston, an officer of the Colgate-Palmolive Company for over 30 years, has retired after 42 years during which he handled legal matters for the company throughout the world.

ARTHUR JOHNSTON

Mr. Johnston also has been active in trade association affairs. He has served as an officer or director of the

Toilet Goods Association since its formation in 1935, and was president from 1958 to 1960. For the past three years he has held the post of chairman of the Legislative Committee of the Association of American Soap & Glycerine Producers.

Givaudan-Delawanna Conference

The Canadian sales personnel of Givaudan-Delawanna recently met with those of the United States for four days, at the Hotel Manhattan in New York City.

The conference included an all-day visit to the company's plant at Delawanna, N. J., where members of the analytical, research, production, and other departments demonstrated new techniques and the modern production facilities.

During the meeting, the growth of the international Givaudan organization and the expansion of its production facilities were discussed. The meeting concluded with a banquet addressed by E. R. Durrer, R. E. Horsey, and Xavier Givaudan, grandson of one of the founders of the company.

Siegel Appointed Deputy Medical Director

Dr. Irwin Siegel has been appointed Deputy Medical Director of the Food and Drug Administration. He had been associate director of the New Drug Branch of the Bureau of Medicine.

Dr. Siegel joined FDA in 1957 as a medical officer after engaging in private practice. He has also held a residency at Crile Veterans Administration Hospital, where he was later a staff physician, and served as a first lieutenant and then captain on the staff of the Army Medical Service Graduate School, Walter Reed Army Medical Center.

Parran Re-elected N.V.F. President

Dr. Thomas G. Parran, former surgeon general of the United States and president of the Avalon Foundation, has been re-elected president of the National Vitamin Foundation, which subsidizes basic and clinical research in nutrition.

Also re-elected at the recent annual meeting of the Vitamin Foundation in New York City were: executive vice-president and scientific director, Dr. Robert S. Goodhart; vice-president, Dr. Walter A. Compton, Miles Laboratories, Inc.; vice-president, J. Philip Smith, Chas. Pfizer & Co., Inc.; vice-president, Dr. E. Gifford Upjohn, The Upjohn Company; chairman of the board of governors, Graham C. Mees, Distillation Products Industries; chairman, executive committee, Dr. George R. Hazel, Abbott Laboratories; treasurer, Paul J. Cardinal, Hoffmann-La Roche Inc.; and secretary, Mrs. Rita D. Gnesin.

Canadian and U. S. Sales personnel at the recent sales meeting at the Hotel Manhattan, New York, of Givaudan-Delawanna, Inc. and its associates, Givaudan Flavors Inc., and Sindar Corp.

Annual spring meeting of the Packaging Institute's Drug and Pharmaceutical Committee at Wheaton Company in Millville, N. J. L to R: Cowperthwaite, Brown, Schettel, Konschak, Spounello, Nack, Eagan, Van Allen, Schnebell, Dunham, Field, Gavigan, Waltner, Hewlett, Duellman, Robinson, Erskine, Hennessy, Kolbas, Burnside, Walker, Norris, Wherry, Horner, Wentzel.

Expansions, New Plants and Acquisitions

Procter & Gamble Company will construct a research and technical services center in Brussels, Belgium, to service the firm's expanding activities in continental Europe. The Brussels center will be operated as a new Belgian subsidiary, incorporated as Procter & Gamble European Technical Center, S. A. . . . **Atlas Powder Company** is considering a merger of the Stuart Company, a West Coast ethical pharmaceuticals firm, into Atlas. The merger proposal involves a four-for-one split of Atlas common stock. . . . **Industrial Bio-Test Laboratories, Inc.** has announced a three-phase major expansion program: completion of a 10,000 square foot air-conditioned and humidity-controlled toxicological research laboratory for small animal studies; the start of construction of a 12,000 square foot toxicological laboratory for dog studies, to be completed by early summer; and plans for a new administration building, which will allow conversion of present offices into additional biochemistry laboratory space . . . **Smith Kline & French Laboratories** has purchased Julian Laboratories, Inc. Dr. Percy L. Julian, an organic chemist and founder of the firm, will continue as president of the new SK&F subsidiary. In addition to its headquarters in Chicago, Julian Laboratories, Inc., operates a plant in Mexico . . . **Kimble Glass Company,** a subsidiary of Owens-Illinois, has begun a two-fold expansion program to broaden its line of scientific and laboratory glassware, with the addition of a manufacturing and warehouse area and the construction of two new furnaces in the existing plant . . . **George J. Meyer Manufacturing Company**

The Pfizer Building, 33-story structure at 235 East 42nd St., N. Y., is now ready for occupancy. Chas. Pfizer & Co., Inc., has a long-term lease on over 300,000 square feet of the building's over-all 535,000 square footage for all company headquarters operations.

has purchased Machinery Service, Inc. George L. N. Meyer, Jr., general manager of Economic Machinery Company, a division of the Meyer firm, will be president and a director of Machinery Service. . . . **R. T. Vanderbilt Company, Inc.,** has purchased the C. E. Ising Corp., manufacturer of chemicals and aromatics. Ising, which was established in 1908, had been operated since the death of its founder in 1943, by Mrs. Ising, who died in 1960.

D&O Scholarship Award

To encourage deserving and outstanding students to take undergraduate work leading to a Bachelor's Degree in food technology, food engineering or food science, Dodge & Olcott presents each year a $1000 scholarship.

Kenneth W. Hartley, vice-president, recently awarded the plaque accompanying this scholarship to Theodore P. Labuza at the annual students' night meeting of the northeast section, Institute of Food Technologists, under whose auspices the scholarship is presented. Mr. Labuza is a student at the Massachusetts Institute of Technology.

Anchor's Package Division Moves

Anchor Hocking Glass Corporation has removed its Cincinnati Package Division display and sales office from the Enquirer Building to larger modern quarters at 1501 Madison Road, Cincinnati 6, Ohio.

Warner-Lambert Chemists Win CIBS Award

Dr. Martin M. Rieger, director of cosmetic development, and Stanley Brechner, senior chemist, both of Warner - Lambert Pharmaceutical Company, Inc., were presented with the annual CIBS Award by Robert E. Ring, president of the Cosmetic Industry Buyers' and Suppliers' Association, at the Scientific Section luncheon of the TGA on May 11.

The award is presented to the authors of the most meritorious paper delivered at the Scientific Section of the TGA during the past year. The winning paper for 1960 is entitled, "Studies on the Adsorption of a Simple Dyestuff by Hair."

Brefflich to Represent Werner G. Smith, Inc.

The Brefflich Company of New Orleans, La., has been appointed sales representative for Werner G. Smith, Inc., producer of sperm whale oil products, other oil products, and fat-based chemicals.

Dr. Henderson Named P.M.A. Medical Section Chairman

Dr. John Henderson of Princeton, N. J., medical director of Johnson & Johnson, has been named chairman of the Medical Section of the Pharmaceutical Manufacturers Association. He succeeds Dr. Charles Mann of Bristol Laboratories.

Dr. Henderson is the author of "The Complete Book on First Aid" and "A Parents' Guide to Children's Illnesses."

S.C.C. to Honor Dr. Davies

Dr. J. T. Davies, Professor and Head of the Department of Chemical Engineering at the University of Birmingham, England, will receive the 1961 Special Award of the Society of Cosmetic Chemists and its prize of $1,000.00. The award will be presented during the Society's semi-annual meeting to be held May 12, 1961 at the Hotel Biltmore, in New York, in recognition of Dr. Davies' work in the field of surface chemistry.

P&G Vice-President Retires

Harvey C. Knowles, vice-president and director of Procter & Gamble Company since 1942, has retired after 40 years of service with the company. In addition to his regular duties, Mr. Knowles managed the Procter & Gamble Defense Corporation, a nonprofit subsidiary established during World War II to construct and operate ordnance plants for the U. S. government.

Mr. Knowles holds two of the top awards of the American Ordnance Association.

Dr. Purinton Resigns

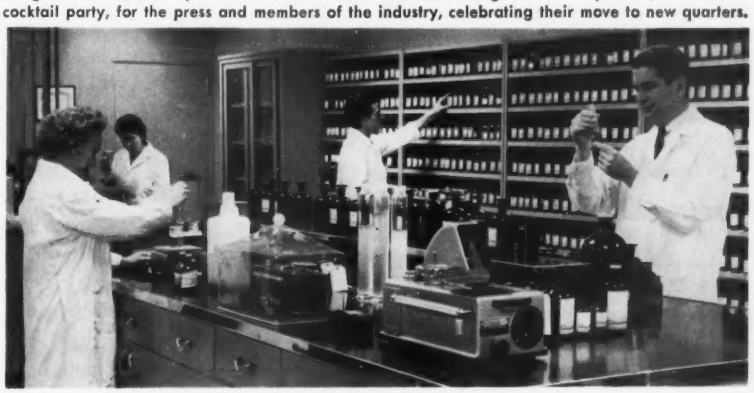
Dr. John A. Purinton, Jr., vice-president and director of production, has resigned from G. D. Searle & Company. Dr. Purinton is fulfilling a lifelong ambition by going into the field of education.

W. J. Mooney

William J. Mooney, a past president of the National Wholesale Druggists' Association, died in Indianapolis at his home on March 20th. He was 67.

A graduate of Notre Dame in 1915, Mr. Mooney had been president of Mooney-Mueller-Ward Company, Inc., drug wholesaler.

Dodge & Olcott, Inc. opened their new laboratories to their guests for inspection, at a recent cocktail party, for the press and members of the industry, celebrating their move to new quarters.



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(*Continued from page 623*)

drugs to the medical profession. It is doubtful that many doctors realize that Preparation H is a corporate blood brother to Sparine and Equanil. And that's the way AHP wants it. This corporate structure is being aped now by other companies. The trend is for ethical drug producers to set up separate divisions for promotion of proprietaries.

The desire to stay in the good graces of the medical profession is a compelling one for ethical drug producers. However, it is now recognized that the companies have probably over-exaggerated their fears about physicians resenting advertising to consumers. Certainly, there is little evidence that doctors have stopped recommending Mead Johnson's infant formulas because of the big Metrecal push. John L. Deal, advertising manager of Upjohn, tackled this question head-on in a recent talk.

Mr. Deal said ethical drug companies could now usefully promote more products to the consumer. He called the in-store promotion that has been done for O-T-C products "a self-limiting proposition" because, he pointed out, when a consumer enters a store he is in the mood to buy a brand name that he already knows about. Addressing himself to the medical profession, he added:

"Those few firms who have undertaken brand advertising have done so with a commendable degree of taste. In the long run, this cannot help benefiting the image the public has of the manufacturer. It is an old adage that one of the best forms of corporate advertising is a product that works. The ethics of our advertising to the physician, when transferred to this channel, do not undermine the confidence of the physician in the manufacturer, *providing* the area of use of the product does not mask more serious conditions that require medical attention. To the inquiring physician, I submit that no ethical firm would violate that trust and confidence."

There remains the problem of *money*. Great quantities of green stuff are required in consumer brand advertising—and this is not an expenditure familiar to ethical drug producers. Pierre A. deTarnowsky, consumer marketing boss at Warner-Lambert, warned last year that victory in the proprietary drug market often goes to him who spends the most. Mr. deTarnowsky noted, for example, that if you have an analgesic you want to market and you have only $5,000,000 available for advertising, you may as well forget about it—you need at least $10,000,000 to make a slight dent in this field. Parke, Davis & Co., a company with a $200,000,000 volume, probably does not have an ad budget in excess of $10,000,000. However, Bristol-Myers, with a volume of only $130,000,000, spent $38,000,000 on advertising in 1959. Miles Laboratories spent $21,500,000 in 1959 to produce a sales volume of $72,000,000.

In short, if you are going into the proprietary business, get those shekels out! •

Management Forum

BY FRANCIS CHILSON, Sc.D.
PROFESSIONAL ENGINEER

Glass Boxes

It is the nature of most architectural firms that, once they strike a novel idea in building design or construction good enough to attract a lot of publicity, they work to that ideal as a sort of trademark. Witness the Lever Building in New York, which inaugurated the era of glass boxes. God knows how many little Lever buildings Skidmore Owings and Merrill have since designed, but the country is cluttered with them. And God knows how many imitators have, like sheep, followed Skidmore Owings and Merrill's lead.

Some of these glass boxes are in my opinion good looking, like the Lever Building, for instance. But all are expensive to build, costly to operate, and expensive to maintain. My reason for bringing this to your attention is that the glass box idea has been adopted for laboratories, offices, and factory buildings to an increasing degree in the trade, and I know the headaches associated with them. I was associated with a factory construction project where the architect sold the management a glass facade using two colors of glass with vertical aluminum mullions *a la* Skidmore Owings and Merrill and their satellites. That glass curtain wall was not only expensive to construct but it has been a goddam nuisance to maintain—a costly nuisance. You might ask why I didn't stop it. The reason is that as long as the shape, size, height, location, and internal layout of the building conforms with my ideas, I made it a point of policy not to interfere with an architect's decorative ideas. I might add that I have found by sad experience that when Mr. Big gets sold on an architect's idea, no matter how screwy, it is useless to try to unsell him.

In *The New York Times* of February 12th, 1961 there appeared an article epitomizing the experience New York building operators have had with their glass boxes. This article states that a glass enclosed building costs from 20 to 25 per cent more to construct than a masonry building. Masonry walls have an indefinite life but this cannot be said about glass walls. Because of the difference in the coefficient of expansion between the glass panels and the supporting metal frames, the joints open up, causing leakage during rainstorms and heat loss in winter. "Many people," says the consulting engineer quoted in the article, "erroneously think that a glass exterior can be put up more speedily than masonry. This is not true because the steel frame has to be completed before glass is installed, whereas masonry work can begin after a couple of stories of steel work are finished."

In my opinion, this is probably true only of a multiple-story building, and is not due to any inherent requirement of glass construction, but is probably caused by the danger of breaking the panels during the construction process.

One of the problems I have run into is leakage into the air space between double-glazed windows. This not only nullifies the insulating effect of double glazing, but the dust seeping in with the air sticks to the glass because of condensation moisture, resulting in filthy windows that cannot be cleaned except by taking them apart.

Of other problems the *Times* says:

"There is no question that it costs more to heat a building with a preponderance of glass exterior. Five years ago this was studied in detail by the Turner Construction Company, using a building model with 70 per cent masonry and 30 per cent glass, and another with 30 per cent masonry and 70 per cent glass.

"Tests showed that the heat loss in the building with an exterior predominantly of masonry was 3,420 B. T. U.'s (British Thermal Units) an hour. On the other hand, the heat loss in the predominantly glass building was more than twice as great—7,180 B. T. U.'s an hour.

"The increased cost of the heating and air conditioning system in the glass-walled building, the Turner study says, will run from $1.20 to $1.80 per

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square foot of wall more than in the conventional-walled building.

"If these walls total 30,000 square feet, the increased cost of the heating and air conditioning systems would be $36,000 to $54,000. In addition, the operating costs go up proportionately.

"Turner is in the process of making a follow-up study of the situation. It is likely that, with improved sealing methods employed in recent years, the heat loss will be found to be not so great.

"Another problem is the increasing use of glass in the newer public schools. A Board of Education official says this has resulted in a sharp increase in vandalism, especially in problem areas, as the vast expanses of glass present too much of a temptation to neighborhood stone-throwers."

The Physche Plumbers

A good friend of mine, a well-trained and widely experienced industrial psychologist, recently wrote me a letter, pinning my ears back for a remark I made during my talk with the production men of the PMA last spring. My remark was to the effect that the selection of men to fill key executive posts is too important to be left entirely to the judgment of the professional "head readers." My friend felt that I was slurring his profession and denigrating its importance as a management tool.

While I feel that industrial psychology has a niche in management and that some day truly qualified professional psychologists will fill that niche properly, I am opposed to phonies, and there are many of them. I am also opposed to management stupidity in supporting blindly any sort of fad whatever, provided it is popular. I strongly feel that management in this country has gone overboard in giving unrestricted lattitude to so-called industrial psychologists and in generally accepting their findings as infallible.

A typical example of the questionable findings of some industrial psychologists is cited in the February issue of *Fortune*, in an article devoted to the phenomenal business success of Walton M. Jarman, chairman and chief executive of Genesco Inc., a 312-million-dollar enterprise that he built up from a very small business. "About five years ago," says *Fortune*, "after a team of management consultants had set up a battery of psychological tests for potential executives at Genesco, Jarman decided to take the tests himself under an assumed name. The consultants thought the company should not hire him because he was too shy and self conscious ever to deal successfully with people and would be a failure in management!"

There you have it. What the article does not reveal is the substantial amount of money paid in fees to the "team of management consultants."

I've encountered dozens of instances similar to Jarman's in my practice in this industry. I have known of instances—many of them—where top-flight men were by-passed for promotion simply because they didn't come up to par in their psychological tests. I have known just as many duds who were given jobs beyond their capacities because they bore the imprimatur of an industrial psychologist. Some years ago, one of my clients fell hook-line-and-sinker for psychological testing. He made all his key men take the tests, but he got a belly-full when he got a report on his star salesman to the effect that the fellow was far below par in sales ability! That ended the testing. But quick!

I am fully aware of the fact that many so-called industrial psychologists are not qualified professionals at all. They are phonies. Some of them don't even have a degree in psychology; they are out for fast bucks and they have facile tongues. They are good salesmen themselves and they repeatedly sell very little for very much. What I do not understand is why so many hard-headed business men fall for the fast line of the fast-buck men. But they do. And some managers swear by them, even when they know that interviews and examinations conducted in New York are "interpreted" in Los Angeles or Chicago! And this by people who never saw the subjects!

Industrial psychologists, so-called, have directly caused labor difficulties in many firms, and in a great many more have been the direct cause of vicious, dirty politics. Notwithstanding, I feel that well-trained industrial psychologists have a place in management, for it stands to reason that persons trained to understand human motivation should be better qualified to select outstanding people, and by their understanding of human beings to get at the emotional difficulties that impair the effectiveness of workers and executives alike.

But in consideration of the history of all the enthusiasms that American management has in the past taken up with intense ardor, I fear that the time when the true industrial psychologist finds his proper niche is many years and many wasted millions away.

On Union Domination

All pressure groups organized for the purpose of promoting the cause of special interests, be they unions, religious organizations, trade associations, professional associations, or lobbyists are, whether they realize it or not, intrinsically restrictive of individual liberty in particular areas of interest and therefore, if unrestrained, eventually become inimical to the liberty of all. This is strikingly manifest in the practices of trade unions, as Henry M. Wriston has pointed out:

"Unions were organized to protect the individual because he was in an adverse bargaining position facing the power of a corporation. But a union may go far beyond its essential service. By making membership compulsory and collecting dues by checkoff, sharp limitations are laid upon voluntarism. Sometimes insistence upon uniform wages, seniority rights, work quotas, featherbedding 'rules' and many other

devices accentuate the losses in individuality arising from machine production instead of off-setting them. The union may curb merit increases and promotions; it may impair incentives. When the leader establishes an effective dictatorship, it is an assault upon freedom. Then the individual is a tool, not a master, as in the democratic process he has a right—and an obligation—to be. When this vote is sought to be delivered as a bloc, it is an attempt at invasion of his basic civil rights."

Shortage of Skills

In all the industrial countries of the world there is a frightening shortage of skilled workers. On this subject the *Reader's Digest* recently carried a thought-provoking article.

And it is not only skilled workers who are in short supply, but skilled professionals as well. Craft unions tend to restrict the supply of skilled workers and, as Wriston pointed out recently, professional societies and organizations do exactly the same thing with regard to professional people. In New York recently we had a good example of this when the AMA tried, in spite of an acute shortage of doctors in New York City, to bar 500 foreign doctors from practicing their professions because they could not conform to the union rules of the AMA. As the *Digest* pointed out:

"Far more vital are the development and exploitation of the innate capacities of people to the fullest degree. The most severe limitations upon the expansion of the economy are deficiencies and rigidities tn the skills of the work force.

We have learned to glorify management; it receives special training at many levels and large rewards. The research scientist, with his long years of preparation through arduous discipline, is at last recognized as essential to a growing economy. We are witnessing, dramatically, the shrinking need for the common laborer. Yet some of the crafts and professions—including teaching—pursue restrictive practices which deny many competent people access to their skills. Apprenticeships are limited to give a false 'security' to current practitioners. In the guise of 'standards,' exclusion from professions is common. Restrictions should fall; the first way to expand prosperity and to attain maximum economic growth is through the building of a larger reservoir of people with higher competence."

Liars Figure

I am always suspicious of statistics, particularly percentages, until I can get at the fundamental facts on which the statistics or percentages were based. Several months ago Bishop Sheen on his television program told a story about a southern college which, for the first time in its history, decided to enroll girls as well as boys. At the end of the first year 33 1/3 per cent of the girls had married professors. The statistic was accurate but the facts were that only three girls had enrolled in the school and one of these had married a professor!

You've heard a lot about unemployment. About six and a half million people are out of employment according to government statistics. Now let's look at some qualifying facts. Nothing has recently been published about unemployables. During depression days it was reported that we had in this country about 2 million unemployables. Since the population of this country has increased since then by about one third, our unemployables must also have increased proportionately, bringing the total to about two and three-quarters millions.

In a country of this size at least one-half million people are at all times in the process of changing jobs. If an interviewer happens to catch a family in which one person has taken off a few days before going to another job, that person is recorded as unemployed. Likewise, persons who work only at seasonal work by choice are recorded as unemployed during their off-periods. Similarly "appliance workers," mainly women who take part time jobs to pay for a new refrigerator or washing machine, are recorded as unemployed between appliance purchases. Government unemployment statistics are compiled, so I am told, by house-to-house spot checks in various areas of the country. The data collected is analyzed, tabulated, and projected for the whole country. This method of collecting data may be alright for some purposes, but for unemployment data, with its political and economic connotations, it is too sloppy and inaccurate. I doubt if there are a million really unemployed persons in this country, if employment is defined as continuous paid employment for 50 forty-hour weeks during the previous year.

Recently I listened to a statistical debate on the reduction of dental caries through the use of water containing one part per million of fluorine. The doctor who was in opposition said that the statistics collected from areas using fluorine in drinking water were false, because they were based on test groups of children of ten each, and that the appearance of a single cavity was reported as a ten per cent loss or gain, depending upon which side of the fence you were on.

So, beware of statistics and any and all percentages. You can of course tell your friends proudly that this January you got a 100 per cent larger raise than you did last year, but it could be that the raise was only $2.50 per week this year against $1.25 last year. You'd be telling the truth but implying a lie.

Diminishing Returns

Nothing reaches the point of diminishing returns as fast as advertising. Advertising expenditures are usually related to sales. The more you advertise the more you sell. (When I say "advertising" I mean also to include the whole bag of tricks in marketing.) And, sometimes the more you sell the less profit you make.

Look at the reports for 1960 of the various listed drug companies. Virtually all are reporting higher sales and lower profits. Take Smith Kline & French for example. They reported an increase of ten million dollars in sales over 1959 and a decrease in profits over the same year of one-quarter million. Since, in 1959, the company earned 46 per cent before income taxes, its loss of normal profit on the ten-million-dollar sales increase amounted to four million six hundred thousand dollars, plus the one-quarter million referred to above. Doubtless, if one had all the supporting figures, one would find increased expenditures for advertising and other marketing gimmicks and possibly for increased research as well.

The need for watching critically expenditures for advertising compared with sales income may be illustrated by a comparative table that I was shown of sales vs. advertisoing expenditures on a well-known proprietary product. This table covered a period of 20 years. The president proudly pointed out that "every year there was an increase in sales—right straight through the depression years!" He was proud of the performance because he himself as a junior executive had persuaded his boss at that time to advertise the product. What he didn't see was that it was taking more and more dollars of advertising to produce the dollars of sales of which he was so proud. Had the figures been presented to him properly, that is, in the form of two curves showing dollars of sales per dollar of advertising expenditure, my friend would have noticed long ago that the point of diminishing return had been reached. It would have been better still had the graph represented dollars of net profit produced per dollar of advertising expenditure. That isn't so easy to get at, because conventional accounting methods usually bury advertising expenditures with all other marketing expenses.

I don't mean that there is always a maximum expenditure for advertising. The point of diminishing return may mean only that you need a new agency or certainly a new approach—if you are convinced on the basis of comprehensive and accurate market research figures that your share of the potential market for your product is much greater than you have been getting. Some very smart marketing operators project, on the basis of accurate market research data, their possible share of the total potential market, and they project also the amount of time and money required to reach their objective. After that, the product is supported only by a sustaining allowance, if needed.

Puc Vikosators

This is the name of a machine made in West Germany and distributed in this country by Hubert C. Stollenwerk Inc., Hamburg Avenue, Egg Harbor City, New Jersey. It is a combination colloid mill, high-speed grinder, homogenizer. The manufacturer claims it will make a stable, smooth emulsion from anything that can be fed into it—literally from soup to nuts. It has been used for making peanut butter, fruit and vegetable purees; pharmaceutical and cosmetic suspensions and emulsions; fish paste, latex compounds, toothpaste, epidermal tissue suspensions, fibrous drugs (provided a minimum of 30 per cent of water is present in the fibres); pigments and paints, penicillin emulsions and so on. The machine is available in capacities up to 33,000 pounds per hour, depending upon product. This is a good machine.

Case Packer

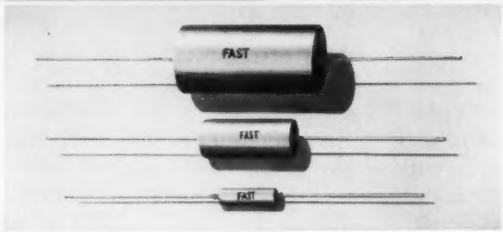
Terry Carter who, some years ago, used to work with me at Burroughs-Wellcome as chief engineer, is now in his own packaging machinery business as president of Basic Methods Inc., 204 Glen Road, Sparta, N. J. Terry has designed and built several ingenious, simple, and inexpensive machines for packing bottles, jars, cans, cartons, and what have you into shipping cases. These machines cost about a third of competitive machines for similar purposes and are far smaller and simpler. Several of these machines are giving satisfactory operation in the trade and those of my clients who have the machines like them. One beauty of these simple machines is that they are almost infinitely adjustable, and thus able to take small as well as big runs. One of my clients is using a Carter Packer on a 150-a-minute bottle line.

Aeromatic Dryers

In Switzerland recently, I saw several Aeromatic Dryers operating in pharmaceutical plants and I also visited the manufacturer of these dryers. Several are in use in this country and I believe the dryer is handled in the U. S. by W. J. Fitzpatrick, 1001 Washington Blvd., Chicago, Ill. The Aeromatic is made in batch and continuous types. In operation, a layer of granulation about six inches deep is placed in a lucite or stainless steel pan with tapered sides, resembling an old fashioned bread pan. The bottom of these pans is made of fine stainless steel wire cloth. The loaded vessel is placed in a chamber under a nylon stocking air-relief. An air-tight seal is effected between the air relief and the loaded vessel. The chamber is closed and heated air is *sucked* through the pan containing the moist material. Drying time is rarely more than 30 minutes. The effect of sucking heated air through the material keeps the material in violent turbulence and prevents case hardening or caking. The same firm makes a positive air type in which air is blown through the bottom of the pan. Air-relief stockings are shaken continuously. These dryers are fast, efficient, dustless, and relatively inexpensive.

Changeable Can Dispersion Mixers

Charles Ross & Son Company, Inc., 148 Classon Avenue, Brooklyn 5, N. Y., has introduced a new Double Planetary Changeable Can Mixer in 8, 12,

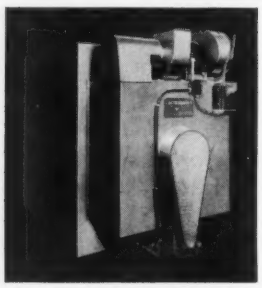


70 people work in the 136,000 cubic-foot area where Fast capacitors are assembled and hermetically sealed. Two Lectrodryers maintain a relative humidity of 15%.

Capacitors pass severe life tests when assembled in desert-dry air

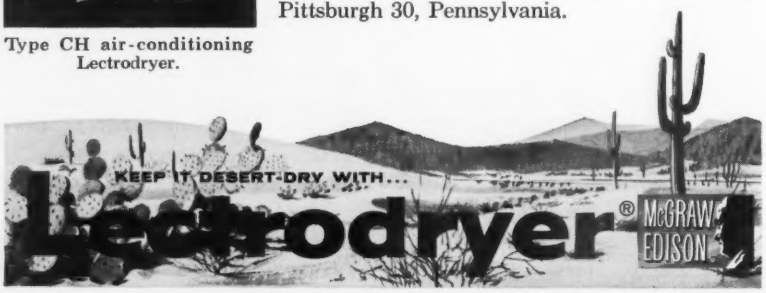
Extra precautions during manufacture of these capacitors by John E. Fast Company, Chicago, help them meet the severe environmental and accelerated life tests required before they can become key components in electronic assemblies. At Fast, operators are required to wear lint-free smocks, rubber gloves and to refrain from smoking or using cosmetics. A temperature of 70°F and relative humidity of 15% is maintained in workrooms the year around.

Two Type CHT Lectrodryers dry the air drawn from workrooms and fresh makeup air to a dewpoint of −45° F. Then the air passes through dust filters and a 13,000-volt electrostatic precipitator.



Type CH air-conditioning Lectrodryer.

Drying air like this may be the answer to your production problems, whether you're making electronic equipment or precision metal products, chemical raw materials or pharmaceuticals. Lectrodryer's Case History Sheets describe such installations. For copies or other drying help, write Pittsburgh Lectrodryer Division, McGraw-Edison Company, 309 32nd Street, Pittsburgh 30, Pennsylvania.



and 20 gallon sizes with dispersion stirrers and a simplified hydraulic lowering and raising device. The new machines feature a compact built-in hydraulic control for raising and lowering stirrers from can.

Stirrers are of one-piece cast steel or stainless steel construction and overlap center of can as well as each other. Stirrers rub close to each other and can sides, to develop a tremendous compressive and shearing action on the heaviest paste materials.

Standard units are provided with variable-speed motor drive, and vacuum covers or jacketed cans are among the optional features.

Straight Line Unscrambler

Standard Metal Products, 123 N. Racine Avenue, Chicago 7, Ill., has developed a straight-line unit which unscrambles containers by take-away on three forward-direction belts, with a reverse-direction belt which returns containers from congested areas to prevent jamming. Each forward-direction belt moves at a progressively higher speed to permit safe, gradual acceleration to the maximum-speed take-away belt.

All belts are made of self-lubricating Delrin plastic, which will never rust or corrode. All four belts are economically powered from a single variable-speed drive.

Air Operated Stainless Steel Pump Line

Gray Company, Inc., 1063 Sibley Street N. E., Minneapolis 13, Minn., has announced its new line of air-operated stainless steel pumps. Constructed of high-alloy stainless steel, they maintain absolute purity of products, are corrosion resistant and are easier to clean and care for.

Vitamin Blending Techniques

Patterson-Kelley Company, Inc., East Stroudsburg, Pa., has designed a Twin Shell blender that was used in recent research in blending pharmaceuticals at Hoffmann-La Roche Inc. The research centered around the development of blending techniques without the use of fluids as a mixing agent, and resulted in the production of a new chewable, flavored multivitamin tablet.

The Twin Shell blender, a cylinder which has been cut at an angle and rejoined in a V shape, contains a high-speed liquid-feed bar to distribute liquid evenly in a uniform dispersion pattern. All materials are screened before insertion in the blender. After the blending period the batch is released into a drum and then transported to the tableting area. The blenders are easily cleaned by hosing down and allowing the water to collect in a drum placed below the valve at the apex of the blender.

Portable Moisture Meter

Scientific and Process Instruments Division of Beckman Instruments, Inc., 2500 Fullerton Road, Fullerton, Calif., is marketing a new portable moisture meter, designed to measure trace quantities of moisture in gases. The Hygromite monitors water vapor continuously in ppm ranges of 0-10, 0-30, 0-100, 0-300, and 0-1,000, with accuracy of $\pm$ 5 per cent of full scale in any of the ranges. It weighs 11 pounds and is encased in high impact-resistant plastic with a built-in carrying handle, and can be operated either from A.C. power or with the battery power supply included in the instrument.

Special Packaging Machine

Wrap-Ade Machine Company, Inc., is marketing a machine designed for wrapping slender items such as cotton tip swabs, and similar narrow, pencil-like items usually too thin to run on standard conveyers. This hand or automatically fed machine will process 100 hermetically sealed packages per minute.

Pro-Pac Filters

Pacific Sintered Metals Company, 8333 Hindry Avenue, Los Angeles 45, Calif., has developed Poro-Pac filters to provide industry with complete micronic filtration systems removing contaminants to 5 microns from all liquids and gases. The Poro-Pac features corrosion-resistant brass cases; Porous metal Sintered Bronze, ductile shock proof elements that are easily cleaned and require no replacement; and operating temperatures of $-400°$ F. to $+900°$ F. All cases are rated at 250 psi and are completely sealed with "0" rings.

Latest Stretch Packaging Equipment

Inpak Systems, Inc., 141 East 44th Street, N. Y. C., has developed a new Stretch Packaging machine with a reproduction speed of 40 to 80 packages per minute with a rated average of 50 per minute. It is 112 x 32 inches with a table height of 34 inches, a total height of 53 inches, and eight stations.

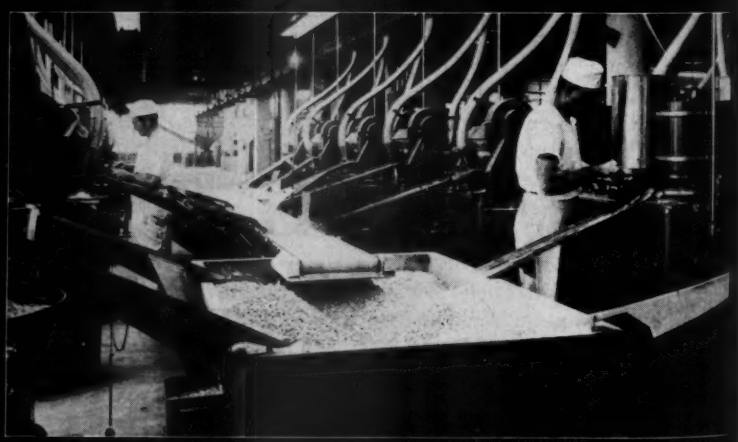
X-ray Inspector

General Electric Company, X-ray Department, 4855 West Electric Avenue, Milwaukee, Wis., has introduced a beefed-up X-ray inspector that inspects 1000 opaque, sealed containers per minute.

Largely responsible for the inspection speed and operating life increases is a new ion chamber radiation detection system. More sensitive than the crystal detector of previous X-ray inspectors—and therefore requiring less intense radiation—the hermetically sealed metal chamber also reduces electrical current requirements of the system. An adjustable lead aperture in the tube head further optimizes radiation beam accuracy.

Hytafill 1000 is designed to monitor the fill height of any sufficiently dense liquid or free-flowing solid which seeks its own level in an appropriate sized metal—including aluminum—can, plastic container, and many types of glass containers. The unit is adaptable for irregular as well as regular shaped containers.

a first in complete automation



Millions of TUMS are produced daily by this battery of Stokes high-speed rotary tabletting machines at the Lewis-Howe plant in St. Louis. The tablets are discharged into hoppers which automatically feed into packaging machines on the floor below.

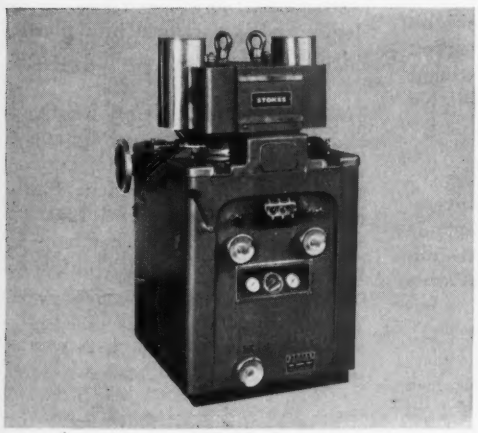
with STOKES high-speed tabletting presses

Millions regularly depend on the fast, gentle relief afforded by tasty TUMS. And the number of TUMS fans is growing every day. To meet this ever increasing demand, Lewis-Howe Company has equipped its newly expanded facility for *complete automatic operation* . . . from formulating and tabletting to sorting and packaging.

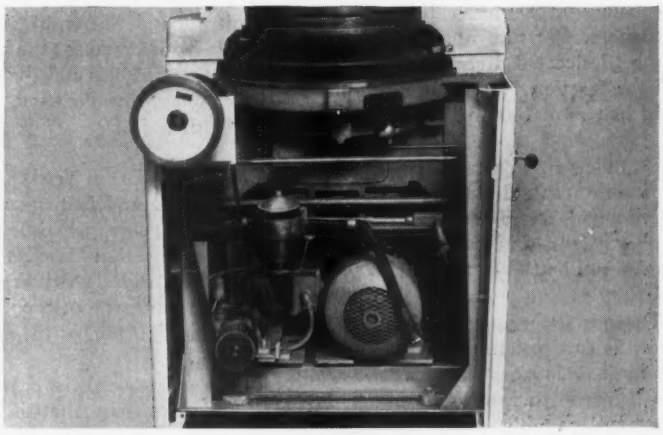
Pacesetters in this new production facility are Stokes High-Speed Rotary Tabletting Machines. Creating new standards in precision, compactness, and simplified operation, these high-speed presses produce tablets of exceptional hardness and uniformity at extremely high production rates. Rejects are virtually eliminated.

The Stokes Model 533 Press is proving particularly well suited to automatic, high-speed production. Lewis-Howe personnel find the 533 easy to operate . . . all controls are operator-oriented, and adjustments can be made while the machine is running. Hydraulic overload protection and automatic self-lubrication minimize maintenance and provide years of trouble-free operation.

These and the many other advanced features of Stokes high-speed tabletting machines can bring new economies to your tabletting operation. To get complete technical details and prompt application assistance, consult Stokes Advisory Service. For more complete performance data on the Stokes Model 533, write for Bulletin 110.



To simplify set-up and operation on the Stokes high-speed Model 533, all controls and indicators are grouped on a single panel.



Drive for the Model 533 is contained in the base of the machine, readily accessible for servicing, and saving up to 50% floor space.

pharmaceutical equipment division

F. J. STOKES CORPORATION

STOKES

5500 TABOR ROAD • PHILADELPHIA 20, PA.

Stokes International: Philadelphia • Toronto • London

New Products

PHARMACEUTICALS

Aldactazide (Searle) is a diuretic containing 75 mg. of Aldactone and 25 mg. of hydrochlorothiazide in each tablet. Aldactazide is used in the treatment of edema and ascites, including that resistant to conventional diuretics, resulting from congestive heart failure, hepatic cirrhosis, the nephrotic syndrome, and idiopathic edema. Available in bottles of 20 and 100 tablets.

Zentron (Lilly) is a liquid hemotinic to correct iron deficiency and prevent vitamin B complex and vitamin C deficiencies. Each 5 cc. teaspoonful of the lemon-yellow liquid contains: 100 mg. ferrous sulfate, 1 mg. thiamine hydrochloride, 1 mg. riboflavin, 0.5 mg. pyridoxine hydrochloride, 5 mcg. vitamin B_{12} crystalline, 1 mg. pantothenic acid, 5 mg. nicotinamide, 35 mg. ascorbic acid, and 2 per cent alcohol. Supplied in 8-ounce bottles.

Surbex-T, Filmtab (O-T-C) (Abbott) is a high potency vitamin B-complex with vitamin C. Each Surbex-T Filmtab represents: 15 mg. thiamine mononitrate, 10 mg. riboflavin, 100 mg. nicotinamide, 5 mg. pyridoxine hydrochloride, 4 mcg. cobalamin, 20 mg. calcium pantothenate, 500 mg. ascorbic acid, 75 mg. desiccated liver, N.F., 75 mg. liver fraction 2, N.F. It is supplied in bottles of 100 and 1000.

Pramilets-F, Filmtab (Abbott) is a vitamin-mineral supplement, with folic acid, for pregnancy. The phosphorus-free dietary supplement comes in bottles of 100 and 1000.

Delenar (Schering) is a formulation of a corticosteroid, analgesic and muscle relaxant, that provides antirheumatic therapy at minimal dosages. Each tablet contains dexamethasone 0.15 mg., aluminum aspirin 375 mg. and orphenadrine hydrochloride 15 mg. Delenar controls inflammation, eases pain, relieves muscle spasm, and permits increased range of motion. It is supplied in bottles of 100 and 1000.

Parnate (Smith Kline & French) is a relatively fast-acting drug for the symptomatic treatment of mental depression. The chemical compound is tranylcypromine. Parnate is not a hydrazine derivative, and it comes in bottles of 50 10 mg. tablets.

Nactisol (McNeil) provides control of disturbances of gastric acid secretion and gastrointestinal motility when complicated by tension and anxiety. Each scored yellow tablet contains Butisol Sodium butabarbital sodium 15 mg. and Nacton poldine methylsulfate 4 mg., in bottles of 100 and 500.

Nasal Spray (Matco) has been introduced for cold, hay fever, allergies and nasal congestion. Each 20 cc. plastic spray bottle contains phenylephrine hydrochloride, benzalkonium chloride, chlorobutanol, and tyrothricin in an isotonic solution.

Aqua Ivy (Syntex) is a new high-potency formula containing 1.2 mg. of dry alum-precipitated pyridine ivy used as a prophylaxis against ivy poisoning from poison ivy, and common poison oak. Available in bottles of 50 and 100 tablets.

Isordil with Phenobarbital (Ives-Cameron) is an orange, scored tablet containing 10 mg. of isosorbide dinitrate and 15 mg. of phenobarbital. It is indicated for the prevention of angina pectoris and the treatment of coronary insufficiency. Available in bottles of 100.

Ilocalm (Warren-Teed) comes in tablet form and features antiulcerogenesis, a new principle of peptic ulcer medication. Each tablet contains 25 mg. d-calcium pantothenate, 2.5 mg. methscopolamine nitrate, and 30 mg. of mephobarbital.

Necta (Norwich) is a sodium-free liquid saccharin that is useful in weight control and sugar restricted diets. A manufacturing process has been developed which is less likely to produce a compound with a bitter aftertaste. It comes in a 4-ounce glass container.

Emiyan (U. S. Vitamin) is a new central nervous system stimulant, whose principal action is stimulation of the respiratory center. Chemically it is diethylamide of vanillic acid (3-methoxyl-4-hydroxybenzoic acid diethylamide). The stimulant is for the treatment of central depressant drug intoxication and the management of respiratory depression from other causes.

COSMETICS

Nestle-LeMur's Wisp Stick keeps stray hair in place and gives quick color touchups in black, brown or silver gray. It is also available in neutral.

Mennen's Genteel for newborn babies, washes and leaves an invisible medicated protection. It is available in 6- and 12-ounce unbreakable polyethylene bottles in blue and pink.

Realistic's Spring Alive is a hair spray for hair that needs body. It is especially recommended for use on extra-porous, bleached, or color-treated hair. It will not flake or leave hair sticky. It is available in the extra-large salon size only.

Coty's Light and Lovely is a foundation and powder in one, which is available in two formulas—Natural for a light, translucent finish, and Dramatic for a more complete coverage. Each formula comes in 8 shades and is packaged in a plastic tube.

Rayette's Foaming Color for Grey Hair in four shades, Permanent Charcoal, Permanent Slate, Permanent Silver, and Permanent Platinum is for the woman with from 10 to 100 per cent grey in her hair. It will not rub off or wash out, and can be reapplied over and over again with no color buildup, darkening, streaking or line of demarcation.

Max Factor Nail Satin comes in 20 new satin-sheen colors that are coordinated with the company's lipstick colors, and has a hard, chip-resistant finish.

Schick Pre-Shave Lotion and After Shave are new lotions containing hexachlorophene to be used before and after electric shaving. Both products come in 4-ounce bottles.

Increasingly the product of choice...

SINDAR'S G-11® (HEXACHLOROPHENE U.S.P.)

Here are the facts which have convinced so many leading manufacturers of soaps and cosmetics that G-11 is the most effective germicide and deodorant available.

Deodorant Action: Scientific studies have proved that G-11 remains on the skin even after washing. It therefore provides *continuous* control – between washings – of bacteria that cause perspiration odor.

Proof of Skin Degerming: 40 independent investigators agree that G-11 reduces the bacterial population of the skin by 95% or more. 150 scientific publications attest to its effectiveness. Over 95% of America's hospitals use it for surgical scrub and other purposes.

Consumer Acceptance: More consumers buy G-11 – Hexachlorophene – soaps than any other deodorant bar. Hexachlorophene is known to millions of people.

Soap Compatibility and Stability: G-11 is effective in *all* types – bar, powder, and liquid soaps and detergents. It is also non-corrosive, alkali stable, effective at all pH's.

Non-Irritation of the Skin: Established by its use in billions of cakes of soap and millions of units of cosmetic and pharmaceutical products such as lotions, oils, powders and ointments for babies as well as adults.

Quality: All production meets U.S.P. specifications.

Availability: Immediate shipment of truck or carload quantities from stock. Available around the world.

Technical Service: Sindar discovered hexachlorophene, holds the patents, pioneered its use in antiseptic and deodorant soaps, and is ready to assist you with your technical problems and to supply data on its varied applications.

SINDAR® Corporation
Industrial Aromatics and Chemicals

321 West 44th Street, New York 36, N. Y.

Perfumer's Shelf

Russian Aromatics Industry

In a review by P. W. Sherwood (*Manuf. Chem.* 32: 157, 1960), the current Russian seven year plan is described as calling for a 65 per cent increase in aromatic chemicals in 1965, compared with 1958 levels. Production of natural oils was 646 tons in 1940, dropped to 48 tons in 1946 as a consequence of wartime destruction and occupation and reached 899 tons in 1958. Synthetics fell from 634 tons in 1940 to 370 tons in 1946 and rose to 2447 tons in 1958.

The average annual growth rate for synthetics was 13 per cent during the 1951 to 1958 period and accounted for 72 to 79 per cent of all perfume materials used. The number of synthetics available to Russian perfumers is still limited, 120 to 130 individual materials being offered in 1959, in comparison with more than twice that number available in the United States and in Western Europe. Activity in this field is rising, however, and special emphasis has been placed on the production of imported synthetics such as vanillin, heliotropin, isoeugenol, anisaldehyde, etc.

The production plan also calls for improved quality of finished odors. Terpineol-based lilac, for instance, are to be improved by extraction of a stable oil from lilac flowers. Furthermore, benzyl acetate and jasmone for jasmine are to be supplemented with dihydrojasmone.

Overall, there appears to be a general improvement in quality and range of perfume ingredients available in the U.S.S.R. Effort is being directed toward improving production methods and the development of synthetic methods to decrease the dependance upon imported products.

New Natural Terpenes

Study of the essential oil of Brazilian carqueja revealed the presence of about 55 per cent of carquejyl acetate and 6 to 7 per cent of carquejol, along with nopinene, according to Y. R. Naves (*La France et ses Parf.* No. 15, p. 35, 1960). Carquejol is an orthomenthatrienol which may result from the decyclization of a pinadienol derived from nopinene. Carquejol is the first natural compound with an ortho menthane skeleton found in essential oils.

Heather Odor

An aromatic, balsamic Erica base may be constructed according to E. S. Maurer (*S.P.C.* 34: 290, 1961), along the following lines: coumarin, 50 parts; vanillin, 25; musk ambrette 10; *p*-cresyl phenylacetate 5; methyl cinnamate 5; and benzophenone 5; and by using this to the extent of 5 to 25 per cent in iso-butyl cinnamate (Labdanol), a base emerges which lends itself to the addition of honey, rose or honeysuckle and affords a close simulation of the basic heather nuance.

Essential Oil and Aromatics Analyses

In an extensive review of recent literature, E. Guenther, K. Kulka, and J. A. Rogers, discussed methods of analysis applied to essential oils and aromatic chemicals. This paper was published in *Analytical Chemistry*, 33: 37R, April 1961 and the original should be consulted for more detailed information and the 219 literature references.

Chakravarti *et al.* (*28*) described a spot test for the detection of trace amounts of argemone oil in mustard oil. Liberti and Cartoni demonstrated the application of gas chromatography to the analysis of bergamot and lemon oil. La Face investigated bergamot oil and found a maximum of the ultraviolet absorption spectrum at 313 to 315 m*u*., a minimum at 279 m*u*, and an inflection point at 266 to 267 m*u*. Rothe separated and analyzed citrus oils and citrus juice components by chromatography on specially prepared alumina. Rogers used gas chromatography in connection with infrared and ultraviolet spectrophotometry for the identification of the components of citronella oils from different sources. By the same methods, citronella oil and palmarosa oil were distinguished. Naves and Odermatt recommended gas chromatography for analysis of essential oils, in particular for oils of citronella and lemongrass. Kotlyarova isolated the oil from flowers of jasmine by a three-stage method: vaporization of the essential oil from the flowers, adsorption of the vapors on activated charcoal, and desorption by volatile solvents. The physical properties of the oil and its main constituents were reported. Naves studied jasmine absolutes by gas chromatography. The presence of benzyl alcohol, linalool, benzyl acetate, and benzyl benzoate was confirmed. Linalyl acetate was not detected. Naves found gas chromatrography the most reliable method to distinguish between oil of lavender and oil of lavandin by determination of camphor levels. Costa and do Vale reported that the essential oil of *Lavandula stoechas* can be distinguished from that of *Lavandula pedunculata* by their constituents, which are identified by conventional methods such as fractional distillation. Bernhard examined lemon oil by gas chromatography and accomplished identification of some components and structural fragments of others. Surve, Chakravarti, and Bhattacharyka outlined a method for the evaluation of lemongrass oil; it is based upon the absorption maxima of citral at 238 m*u*. Kesterson, Hen-

drickson, and Edwards reported a spectrophotometric analysis of orange oils; in combination with the residue values of these oils, the spectra indicate the geographical origin and the method of extraction of the oils.

Smith, Bartlet, and Levi recommended sucrose acetate isobutyrate as a new ester liquid phase for gas-liquid partition chromatography. The value of this material was demonstrated in the separation of mint oil constituents. Gurvich described a drop analysis of peppermint oils. A drop of the oil on an aluminosilicate plate shows a characteristic color; a violet-blue luminescence with a red border indicates regular quality and a bright-blue luminescence with a light sky-blue border, a superior quality. Daly, Green, and Eastman analyzed American peppermint oil by fractional distillation, infrared spectroscopy, and gas chromatography. Besides the expected constituents, sabinene hydrate was found. Cyrkal and Janak determined constituents of the essential oils of *Pinus sylvestris*, *Abies alba*, *Pseudotsuga douglasii*, *Abies concola*, *Picea excelsa*, and *Pinus mugo* by gas chromatography. Seidel and Stoll fractionated Bulgarian rose oil and identified in the fraction b_{10} 40° to 150° benzyl alcohol, phenylethyl alcohol, citronellol, linalool, enanthaldehyde, methylheptenone, 1-hexanol, and an oxide, $C_{10}H_{18}O$, which, by oxidative degradation, was identified as 3-methyl-2-(3-methyl-2-butenyl) tetrahydrofurane. Naves analyzed rose absolutes, Bulgarian and Turkish rose oils, by gas partition chromatography and infrared spectroscopy. Ivanov *et al.* separated the hydrocarbon components of oil of rose from oxygenated materials by column chromatography. The results were in agreement with previously reported findings whereby a solvent technique with 75 per cent ethyl alcohol at 0° C. was used. Guseva, Rafanova, and Ivanov found the oils obtained by extraction and steam distillation of rose flowers or petals to be identical. Calvarano analyzed the essential oil derived from *Rosa centifolia* (grown in Calabria) by gas partition chromatography and identified many constituents. Panayotov and Ivanov subjected rose oil to descending paper chromatography. By treatment with 3,5-dinitrobenzyl chloride, various alcohols, such as ethyl, methyl, nonyl, phenylethyl, and probably geraniol, nerol, linalool, and citronellol were detected. The same authors identified various carbonyl compounds in rose oil. Frydman, Montes, and Troparevsky described a chromatographic analysis of essential oils. Glass plates are coated with a silicic acid-starch paste, then oven-dried and vacuum-activated over solid KOH. By the use of various and specific developers the individual components of the essential oils can be identified.

Naves found that gas partition chromatography of thyme oils is more accurate than absorption of the phenols in 5 per cent sodium hydroxide solution.

Hayashi and Hashimoto found paper electrophoresis more rapid than paper chromatography for the detection of essential oil components. The various components, such as terpene alcohols, aldehydes, and lactones, etc., had to be first converted into suitable derivatives before proceeding with the test. By spraying with various color reagents or by ultraviolet light the spots were identified. Hayashi and Hashimoto used paper electrophoresis as a rapid and easy method for the separation and microidentification of essential oil components. They identified 16 essential oils and 14 essential oil components by spot test. Mesnard and Bertucat found that certain essential oils, by acetylation with phosphoric acid and acetic anhydride, gave a greater acetylation index than when reacted with pyridine and acetic anhydride. Karma and Helle reviewed analytical methods for the determination of essential oils from aromatic raw materials. Teitelbaum discussed the merits of infrared spectra in studying essential oils and their components. Langenau and Rogers described and evaluated the various instrumental analytical methods for essential oils and related products. Levi published an essay about the physiochemical characterization of essential oils, essential oil constituents, and their derivatives. The various spectra of several compounds were recorded and their value for identification purposes was demonstrated. Levi *et al.* discussed the methods and procedures of modern instrumentation techniques for the physiochemical characterization of essential oils, their constituents, and derivatives. Thus, infrared spectra, Raman spectra, and x-ray diffraction patterns of a large number of essential oils constituents and derivatives were made, analyzed by instrumental methods, and the findings interpreted.

Tagaki and Mitsui separated menthols by gas chromatography using a polyethylene glycol column. Karagounis, Charbonnier, and Floss reported the resolution of racemic compounds by chromatography on alumina coated with an optically active substance. Among the compounds was *dl*-menthol. Masaaki discussed the solubility curves of *l*-menthol and *d*-neomenthol in nitromethane for a possible separation method. Domange and Longuevalle described a semi-quantitative gaseous method for the analysis of eucalyptol and menthol in essential oils. Krokhin and Zelenetskii isolated linalool from coriander oil and linalyl acetate from muscatel sage oil by fractional distillation. By using a column with 23 theoretical plates 96 per cent pure materials were obtained. Holness made a comparative study of the Glichitch and Fiore method for the determination of linalool. The Fiore method gave results which were approximately 1 per cent lower than the true linalool content. The results of the Glichitch method were 4 per cent lower than the true value.

Petrova and Novikova described a determination of alcohols such as phenylethyl alcohol, geraniol, citronellol, linalool in essential oils of geranium, rose, and citronella by using an acetylation reagent prepared from pyridine and acetic anhydride. Blumann and Melrose identified 4-terpinenol in the oils of nutmegs, tea trees, and *Eucalyptus dives* by formation of the orthoborate from which the alcohol was regenerated.

Levi and Laughton reported a determination of citral in lemongrass and citrus oils. The condensation product of this aldehyde with barbituric acid displays strong ultraviolet absorption at 336 mμ which can be measured quantitatively. Stanley, Lindwall, and Vannier described a colorimetric test for citral which, with a vanillin and piperidine reagent, forms a green color (absorption maximum, 605 mμ).

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Compounder's Corner

Atlas Emulsion Seminars

We attended one of the recent cosmetic emulsion seminars being conducted by Atlas Powder Company in Wilmington, and it was a rewarding experience. At the dinner meeting the night before the seminar, K. E. Mulford, Assistant to the executive vice-president of the company, informally discussed Federal legislation and its relationship to cosmetic formulation. Mr. Mulford is well qualified in the subject, since he is chairman of the additives committee of the Synthetic Organic Chemical Manufacturers' Association and chairman of the food additives committees of the Manufacturing Chemists Association, the American Bar Association, and the New York State Bar Association. He pointed out that the cosmetic industry must be prepared to change over from the current type of policing supervision, in which products are checked after they are marketed to verify their legality, to a form of licensing similar to that required for drugs, where the product must be tested and approved in advance.

The next morning was devoted to a tour of the Atlas Technical Center for the development of new products for the company and customer technical service in diversified fields, and to a talk on "Toxicological Aspects of Cosmetic Formulation" by Dr. Joseph F. Treon, Manager of the Biological Sciences Section in the Atlas Chemical Research Department. Dr. Treon discussed problems in determining toxicity of orally ingested materials and irritation and sensitizing potential of topical applications. In the afternoon session, Phyllis J. Carter discussed problems in emulsification as applied to cosmetic formulation, with technical demonstrations in which the audience participated. The applicability of the HLB system to many cosmetic formulation problems was demonstrated, and the speaker presented a surprisingly complete over-all view of emulsification in a limited period. Dr. Paul Becher, discussing "Theoretical Aspects of Emulsification," lucidly presented a number of relatively difficult theoretical concepts, so that they could be utilized in p r a c t i c a l applications. Questions showed great interest.

These seminars have been given at frequent intervals to small groups from many of the leading cosmetic companies, and participation is expected from others by the end of the scheduled program.

Freon—11S

Aerosol container corrosion caused by the reaction of propellant 11 with anhydrous ethyl alcohol can now be prevented by the use of a newly introduced propellant formulation containing a special stabilizer, according to the Du Pont "Freon" Products Division. The development of the stabilizing agent resulted from Du Pont research to determine the cause of corrosion in nonaqueous products containing ethanol and propellant 11. It had previously been thought that this corrosion was due to hydrolysis by small amounts of water in the mixture, but extensive tests established a reaction between the propellant and the alcohol. This has resulted in Freon-11S, regular Freon-11, trichloromonofluoromethane, to which has been added a small amount of stabilizing agent. The stabilizer was selected as the most effective of numerous inhibitors screened in the Du Pont investigations and the mixture has the same low order of toxicity as Freon-11. A patent has been applied for.

Except for the addition of the stabilizer, the new propellant has exactly the same properties as Freon-11 and will sell at the same price. It is believed to be completely compatible with most nonpharmaceutical aerosol products now being marketed and appears especially advantageous for hair sprays and other personal products, room deodorants, and plant sprays. Government approval will be required for new pharmaceutical uses of Freon-11S.

Sole-Terge 60

Sole-Terge 60 is a new liquid, high-foaming detergent concentrate, now commercially produced by Sole Chemical Corporation, Chicago 19, Illinois. The product may be formulated to make low-cost bubble baths, shampoos, dish-washing detergents and various industrial products, as described in the recently released technical bulletin #1260-1. It contains 80 to 85 per cent of active ingredient, is alkali stable and is compatible with hard and soft waters.

Hair Waving Patent

Brit. Pat. 835,247. May 18, 1960. "Improvements to waving and unwaving hair." Soc. M o n s a v o n L'Oreal, Paris. Relates to a paste for preparing an aqueous solution for changing the configuration of hair. It is known that the configuration of hair may be changed, in the cold or with heating, by splitting the cystine linkages in the keratin structure and by reconstituting t h e s e linkages with the aid of an oxidizing agent, or more slowly with the aid of the oxygen of the air. It is now suggested to use nascent hydrogen for the reduction of cystine linkages. For this purpose a hydrogen-generating product m u s t be used, of which the rate of decomposition can be kept under control, and the residual products of which do not damage the hair and can be readily washed out. It has been discovered that solutions of alkaline borohydrides are very useful for this purpose and have great advantages. Such a paste for softening the keratin in hair comprises a dispersion of a water-soluble, alkaline borohydride in a water-soluble, easily fusible synthetic wax carrier and a buffering agent.

(*Continued from page 599*)

container, which will also handle many solvents. In contrast to polyethylene, the barrier properties of polyesters will keep out oxygen, permitting longer shelf life for the products involved. The Waldorf container can be easily closed; either end of the fold can be used as a pour spout, with the other serving as a vent. Such polyester films as Scotchpack show tensile strength as high as 10,000 pounds per square inch and can be engineered for dimensional stability and flexibility at the same time in a range from −70° to 240° F. The film can be heat-sealed and holds with considerable strength.

A further variation on this theme comes from Inpak Systems Inc., a company which describes itself as a "packaging agency." Inpak, which demonstrated its skin packaging machinery at the exposition, has also made available information on Plastisac, a packaging concept trademarked by American Viscose Corporation and licensed to Inpak for marketing. The process is designed to form seamless plastic containers and liners for containers. In either case, the plastic vessel is formed by blowing the plastic into its shape by means of liquid or gas pressure. When the commodity to be packed is liquid or flowable, the commodity itself can be used to blow the bag and fill it simultaneously. Thus the product can be packaged without admitting any air. With the Plastisac method, liners can be made for all types of receptacles. In addition, liners can be provided in collapsible cartons, which are shipped flat and later filled. This innovation is likely to find wide acceptance for packaging liquids, pastes or powders.

The rapid increase of the use of polyethylene films seems not to have inhibited the increase in cellophane usage. Du Pont, for instance, demonstrated a new cellophane, MSD 60, which is said to result in increased material yields of approximately five per cent, with a 19 per cent yield increase cited for K cellophane.

Packaging machinery improvements were limited primarily to developing higher speeds and a greater degree of automation for existing equipment. The Bartelt Engineering Company demonstrated its Continuous Motion Packager turning out film pouches at the rate of 300 a minute, and claimed a top speed of 600 a minute. Food Machinery & Chemical Corporation's Stokeswrap 1000 is said to deliver form-fill-seal packaging in which two types of film can be run simultaneously to form differently sized packages for different products. This machine will operate on any type of heat-sealable film, paper, foil or laminate. Bemis Brothers's Ultra Pak machine extends the range of products permitted in tetrahedron packages, and Tetra-Pak Type 2 incorporates a photocell device to center printed matter automatically on each package.

A tamper-proof cap for critical or toxic drugs consists of an intricately molded two-piece arrangement of an outer shell of high-density polyethylene and an inner shell of styrene-acrylonitrile copolymer. This safety closure was introduced by the Brockway Glass Company for capping bottles containing prescriptions dangerous to small children.

Perhaps one of the show's most fascinating displays was the application of ultrasonic sealing to materials other than foil. The sealing unit was shown for the first time in applications involving plastics and plastic paper laminates. Mylar, Cronar polyethylene, polypropylene, and many other materials were shown in typical seal operations achieved by ultrasonic vibrations. Ultrasonic welds are made quickly and completely silently with no need for heat, adhesives or chemicals.

In summary, the 1961 A.M.A. Packaging Exposition was an exhaustive and exhausting show—the various exhibits covered more than a mile and a half. It demonstrated the initiative and thoughtfulness being applied to packaging problems throughout the packaging industry, especially in plastics.

MOLDING PLASTICS

(*Continued from page 602*)

longer (in straight compression molding the pressure on the open molds is far greater). This method also reduces finishing costs, since there is little or no *flash*, that is, overflow of the plastic around the edges of the mold, which must be removed, and the gates—the plastic formed in the opening into the mold—are easily removed. One drawback is that the *cull*, that is, the material in the sprue, runners, and gates, must be discarded, since it is polymerized.

Finally, *thermoplastics* are chemical compounds that have already undergone their chemical reactions before molding. These include, among others, cellulose acetate, vinyls, nylon, polyethylene and polystyrene. They are formed by heat and cooled to hardness, and therefore injection molded. Since they are not changed chemically, the process can be repeated, which means that any flash can be reused, provided it is not contaminated by dust or material of another color or type.

In the injection molding of thermoplastics, the granular material is fed into a heated cylinder to soften and pushed into a closed mold, cooled, usually by water flowing through small openings in the mold, and thereby hardened. The gate can be so small that mechanical separation of the article from it may be done on opening the mold. The cull and defective molds can be reused. In this method, exact temperature control is necessary, and this depends entirely on the characteristics of the thermoplastic being molded.

Articles formed by injection molding require little finishing, and the molding cycle is short. *G.M.S.*

(*Finishing and decoration will be described in the June issue.*)

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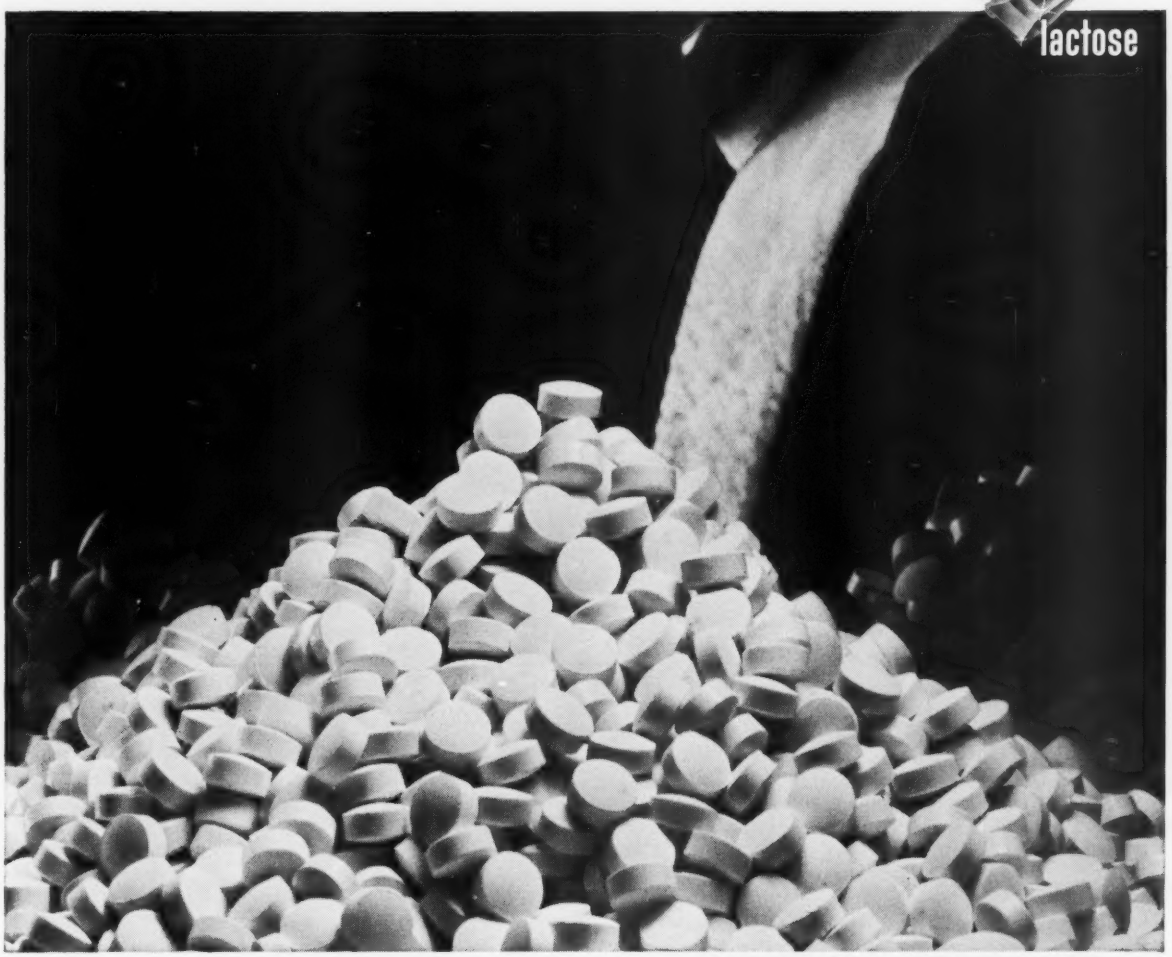

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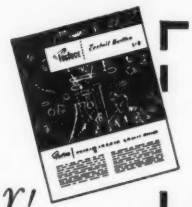

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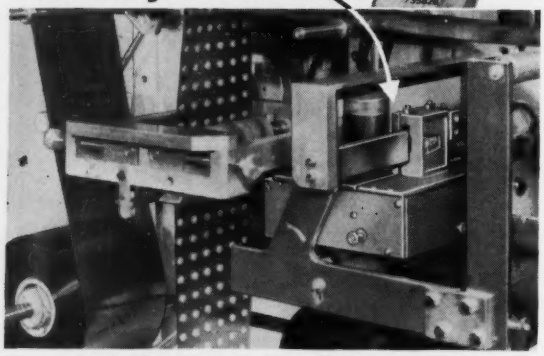

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PERFUMES AND COSMETICS TODAY'S POTENTIALS: 2

(*Continued from page 583*)

tion on matching rouge, lipstick, and nail enamel, but many cosmeticians and makeup artists disagree, and women have not always followed their lead. The industry can promote this use of rouge, as well as its use on all occasions for shadowing and emphasis, but a little will still go a long way.

Lipstick

Lipstick, a basic product of the cosmetic industry, was used by over 50 million American women, and accounted for about $95.1 million of manufacturers' sales volume in 1960. The percentages read usage by 88 per cent of women, varying from 94 per cent at the age of 15 to 68 per cent at the age of 55. A substantial number of these, perhaps one-half, are continuous daily users, and perhaps one-third own as many as three lipsticks at one time. Since lipsticks are almost universally used, are almost universally distributed, and enjoy an excellent frequency of use, what are the potentials for increased sales?

The outlook appears quite good. First, the figures show that today 94 per cent of teen-age girls are users. There is no reason to expect this percentage to drop, and in the next decade the greatest population expansion will be in this group reaching the teens and young adulthood. Therefore, a natural growth can be expected. Some increased, but not too much probably, can be achieved through encouraging more women to increase the number of lipsticks owned and used. Although there is a limit to the number of lipsticks any woman will have, nearly all are interested in trying new shades as they appear seasonally and in new fashion looks.

(*Continued on page 659*)

COMPRESSION CHARACTERISTICS

(*Continued from page 585*)

Stoll-Gershberg apparatus, with a maximum time limit of 30 minutes. If the slug is intact at the 30-minute period it is designated by (30+) in the tables.

Results

The compounds studied were grouped according to their usual use in tableting formulations. Accordingly, five general groups are summarized below, in TABLE 1.

TABLE 1
DATA OBTAINED UPON COMPRESSING MATERIALS*

Fillers or Diluents	A	B	C	D	E	F
Calcium carbonate, ppt.	.497	5.2:1	2	+	—	30+
Calcium phos. dibasic	.880	3.5:1	1	—	—	30+
Calc. phos. tribasic	.540	4.7:1	2	—	+	30+

(*Continued on page 660*)

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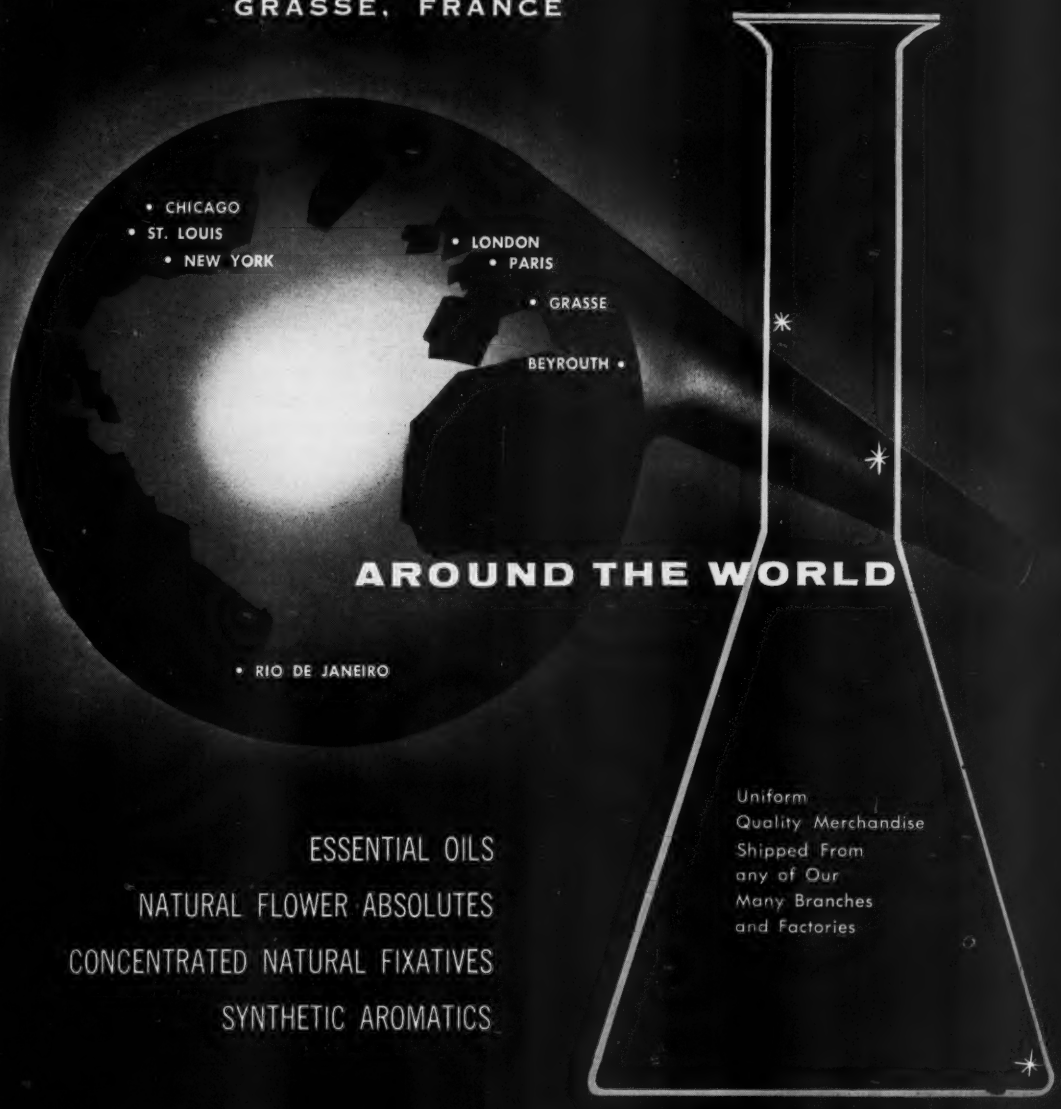

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Skin Research

Topical Griseofulvin

Local application of griseofulvin as a carbowax ointment is as potent as oral administration of the preparation in reducing the intensity and shortening the duration of experimental trichophytosis in guinea pigs, according to J. R. Frey and H. Galeick (*Dermatologica* 121: 265, 1961).

After local application of griseofulvin the infection foci or sites of inoculation become more rapidly fungus-free than after oral administration where fungi can be found by culture 30 days after the inoculation.

After local application of griseofulvin the intrapilary fungus forms are influenced to the same extent as after oral administration, which proves that when applied locally griseofulvin also penetrates into the hair and there reaches as far as the keratogenous zone.

In view of the good results of local treatment in guinea pigs and the limited action of oral griseofulvin therapy in certain dermatomycoses, clinical trial of griseofulvin in a suitable base and perhaps combined with oral administration would seem advisable.

Psoralen Activity

This study by M. A. Pathek, J. H. Fellman, and K. D. Kaufman (*J. Invest. Dermatol.* 35: 165, 1960) covers the biological photosensitizing action of 36 furocoumarin and 42 coumarin derivatives. The appearance of erythemal response following topical application and ultraviolet irradiation with wavelengths greater than 3200 A indicated the photosensitizing activity of these compounds. None of the compounds tested was more active than psoralen itself. Substitution with methyl groups at positions 4, 5′, and 8 did not reduce the activity but methyl substitution at the 4′ or 3 positions significantly decreased the photosensitizing activity of psoralen. Simultaneous substitution at 3 and 4 positions also resulted in loss of activity. Substitution of an alkyl group larger than methyl decreased the activity. Substitution with methoxy, amino, nitro, acetyl, acetamino, bromo, ethylcarbamyl at the 5 or 8 positions resulted in either partial or complete loss of activity. Oxazolocoumarin derivatives were found to be inactive. Hydrogenation of the 4′, 5′ double bond practically eliminates the photosensitizing response. Compounds possessing the isopsoralen structure showed no activity. A benzodifuran derivative was found to be active but hydrogenation resulted in loss of activity. Most of the coumarin derivatives were inactive but six allyloxy coumarins showed a weak photosensitizing response. The implications of these findings in terms of the relationship between molecular configuration and the erythematous activity were discussed.

Surgical Spray Dressing

Rezifilm, E. R. Squibb & Sons, was tested by N. B. Kanof and S. Blau (*Arch. Dermatol.* 83: 503, 1961) as a surgical dressing on sutured and unsutured sites. The product is a sterile spray of methacrylate resin in ethyl acetate, containing tetramethylthiuram disulfide and using a mixture of dichlorodifluoro- and trichlorofluoromethane as propellants.

The spray dressing did not produce any discomfort during the period of application. It dried quickly to form a soft, pliable, and visible but transparent film. It adhered well after a single application for periods up to 10 days, even though soap and water cleansing was not restricted. It produced no primary irritation or allergic sensitization in any patient in this series and no infection was observed in any of the wounds treated in this manner.

Salicylic Acid Absorption

Investigations into the percutaneous absorption of salicylic acid and of methyl salicylate have been undertaken by W. Burckhardt, W. Wirth and N. Ch. Ganzoni (*Dermatologica* 122: 11, 1961). The following facts have emerged: an impermeable dressing considerably augments the absorption. When the salicylic compounds are incorporated in bases in which they are but little soluble, absorption is better than with bases in which they are easily soluble. For a given skin surface, there is an optimum amount of ointment and any in excess of this does not lead to greater absorption. In patients with eczema or neurodermatitis, absorption is increased only if the skin is eroded, while on healthy or diseased skin, as on sites which have been successfully treated, the absorption of salicylic derivatives is normal.

Human Sweat Glands

Eccrine and apocrine glands may be distinguished by their histochemical reactions to periodic acid-Schiff and Alcian Blue according to R. M. Fusaro and R. W. Goltz (*J. Invest. Dermatol.* 36: 79, 1960).

Eccrine secretory cells contain small secretion granules which stain magenta with periodic acid-Schiff and are Alcian Blue positive. Apocrine secretory cells, on the contrary, contain larger granules which are stained red by periodic acid-Schiff and are Alcian Blue negative. In addition the apical portion of the apocrine secretory cells shows a fine, apparently non-particulate haze of periodic acid-Schiff + diastase resistant magenta Alcian Blue + material.

(*Continued from page 656*)

Another factor is that, since the introduction two years ago of white lipsticks—followed by lustres, pastels, and colorless enhancers, more and more women are using two lipsticks in combination. Finally, in spite of some innovations, there is still much room for product development. It is probable that the ideal shape or method of application is still to come.

Eye Makeup

The market for the products in this group has boomed spectacularly in the last years, increasing by about 50 per cent to $22.6 million in 1960. The figures in the survey show 37 per cent usage for eyebrow pencil, varying from 43 per cent to 14 per cent from the younger to the older group; 28 per cent usage for mascara, varying from 40 per cent to 6 per cent; and 15 per cent usage for eye shadow, varying from 22 to 3 per cent. Other surveys of specific groups have shown considerably higher percentage of use of eye makeup products. Such products as eyebrow pencil and mascara have been long accepted, but the increased frequency of use and amount applied are truly astounding. Products such as eye shadow and eye liner, formerly considered, if used at all, for special occasions only, have come to be part of a woman's daily makeup. New developments in products have greatly contributed to this increased usage. Roll-ons, mechanical pencils, liquids, and creams have enabled women to apply skillfully products which they could not handle before.

Sparkles and frostings, ranges in colors and tones enable a woman to create exciting effects for day and evening wear, and have encouraged her to think of eye makeup as she does lipstick and nail polish as a necessary part of daily grooming.

This area of the cosmetic industry holds great promise for the immediate future. The accelerating rate of acceptance for all eye makeup products in recent years is fair assurance of continuing growth. Not only can the industry promote the use of more types of eye makeup to more women, but also it can promote its use in increased frequency and amount to more and more consumers. New products, new colors, and education to vary colors with costume will further stimulate a continuing rise in sales and usage. Outlook: very good.

Hair Preparations

Hair preparations account for approximately one-third of all cosmetics sales and totaled $517.0 million in 1960. With this fact in mind, the industry can be congratulated on doing a good job of education and promotion. Women do know the various types of hair products and their uses and, consequently, are not hesitant to use them. Indeed, a woman must understand and use them. The fashion world seems to decree the creation of new hair styles each year, or even more frequently. The pressure has been so strong and so consistently applied that great numbers of women do change or at least modify their hair styles to conform to the fashion. High styling of hair often takes such extremes that a woman cannot hope to cope without a complete set of hair care preparations. This is true of the woman who has her hair styled and "done" at the beauty shop, but it is perhaps more true of those who attempt their own hair care and styling, or at least part of it. The basic product in hair care, of course, is shampoo. It has long had wide acceptance as a necessary staple in grooming. The survey shows that it is used by 89 per cent of women and accounted for $144.8 million of manufacturers' sales in 1960. Usage varies from 97 per cent at age 15 to 76 per cent at age 55. Other statistics indicate that there was an increase in shampoo sales in the last year, not including shampoo purchased for professional use in beauty shops. There is every reason to believe that in spite of the high percentage of use, this market will continue to expand regularly. Among shampoos, the liquid shampoo has by far the largest market (approximately two-thirds greater than either the cream or lotion), and is having the fastest growth. We can expect this trend to continue.

One should not neglect to mention, among the reasons for the success of this market, industry's development of shampoo products for various types of hair. The wide range of products for care of the hair includes home permanents, wave setting lotions, hair dressing and conditioners, and the indispensable hair spray, in various types also, which accounts for the next largest volume of sales after shampoo, $76.4 million. Our survey showed that 44 per cent of women use a hair spray, with 55 per cent at age 15, varying to 30 per cent at age 55. The increase in sales of hair sprays from 1956 to 1959 has been estimated at almost 400 per cent.

The market that has been and is showing promise of exceptional expansion is that for hair coloring. Today, 37 per cent of women in the United States make some use of a hair rinse or tint. This varies from 33 per cent at age 15 to 26 per cent at age 55. However, the old concept of hair coloring as a bleach or dye, with overtones of immorality, has been demolished. Women no longer regard it as something to disguise graying or unattractive hair, but as something to enhance their total appearance. With the current emphasis on keeping up with seasonal fashion trends and looks, women can be educated to change the color of their hair two or three times yearly. The annual sales growth for hair coloring products has been 10 to 15 per cent annually for the last five years, and sales reached $68.6 million in 1960. There is every reason to expect it to continue gaining for many years, without losing momentum.

In fact, continued growth and success is promised for the entire hair care market. This will be aided by the development of new types of products having new methods of use and added functional values. It is possible that this group will show the greatest growth among the industry's products. •

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(Continued from page 656)

Dextrose	.770	2.8:1	3	—	—	6
Lactose	1.010	2.2:1	3	+	—	1
Mag. carb. heavy	.277	10.4:1	2	—	—	30+
Mag. oxide heavy	.672	4.2:1	2	+	—	30+
Mannitol	.677	3:1	3	+	—	30+
Sucrose, powd.	shatters					
Terra alba ($CaSO_4.2H_2O$)	.944	3.3:1	—	—	—	30+
Disintegrators						
Alginic acid	.500	4.4:1	—	—	—	10
Dextrin, white	.935	2.3:1	1	—	—	8
Dextrin, yellow	.655	3.3:1	1	—	—	30+
Jaguar-A-20B	Slug crumbles—no body					
Solka Floc-BW100	.345	6.4:1	—	—	—	30+
Starch, corn	.756	2.7:1	2	—	—	1
Starch, potato	1.100	1.9:1	—	—	—	1
Excipients						
Acacia	1.00	1.9:1	—	—	—	30+
Gelatin	.962	1.9:1	—	—	—	30+
Methocel 1500	.440	4.2:1	—	—	—	30+
Lubricants						
Boric acid	.919	2.6:1	—	—	—	20
Carbowax 4000	——	2.4:1	—	—	+	15
Carbowax 6000	——	2.5:1	—	—	+	21
Lithium benzoate	.731	3.0:1	—	—	+	10
Mag. stearate	.266	6.2:1	—	—	+	30+
Sodium stearate	.710	2.2:1	—	—	+	30+
Stearic acid	.660	2.3:1	—	+	+	30+
Talcum	.622	5:1	3	+	—	30+
Medicinal Substances						
Acetylsalic. acid	.765	2.9:1	—	—	—	30+
Acetophenetidin	.802	2.3:1	—	+	—	30+
Acetaminophenol	.927	2.0:1	3	—	—	30+
Alum. hyd. dry gel	.204	10:1	1	—	—	30+
Aminoacetic acid	.490	4.2:1	—	+	—	5
Ascorbic acid	Slug crumbles					
Betaine HCl	.809	2.5:1	1	—	—	1
Caffeine anhydrous	.490	4.0:1	—	+	—	20
Caffeine citrat.	.772	2.2:1	3	+	—	17
Calcium gluc.	.574	3.9:1	2	—	—	5
Cinnamyl ephedrine	.349	4.8:1	—	+	—	30+
Citric acid anhydrous	.970	2.2:1	3	—	+	2
Ephedrine sulf.	.532	3.1:1	2	—	—	5
Ferr. sulf. exsic.	1.930	2:1	3	—	—	15
Mag. trisilicate	.533	4:1	1	—	+	30+
Meperidine HCl	.545	3.3:1	—	+	—	3
Pancreatin	.834	2.7:1	—	—	+	30+
Papain	.676	3.2:1	—	+	+	30+
Salicylamide	.580	3.7:1	1	—	—	30+
Sodium bicarb.	1.230	2.4:1	2	+	—	15
Sulfadiazine	.336	6.8:1	2	—	+	30+
Sulfaguanidine	.945	2.4:1	2	—	+	30+
Sulfamerazine	.650	3.9:1	3	+	—	30+
Takadiastase	.743	3:1	2	—	—	30+
Theophylline anhydrous	.782	2.8:1	1	—	—	30+

*Results expressed as the average of five determinations.

Discussion

To illustrate the direct correlation that exists between the comparison characteristics of individual materials and a mixture of these materials, a formula consisting of 50 per cent acetylsalicylic acid, 20 per cent acetophenetidin, 20 per cent lactose, and 10 per cent starch was prepared. By referring to TABLE 1 and using the indicated percentage for each ingredient in this formula of the values listed in TABLE 1, the hypothetical compression data can be calculated for this powder mixture.

TABLE 2
CALCULATION OF THE COMPRESSION CHARACTERISTICS OF MIXTURE

	A	B	C	D	E	F
Aspirin 50%	.383	1.45:1	—	—	—	15
Phenacetin 20%	.160	.46:1	—	+	—	6

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Lactose 20%	.202	.44:1	0.6	+	—	—
Starch 10%	.076	.03:1	0.2	—	—	—
Total 100%	.821	2.38:1	.8	—	—	21

TABLE 3
ACTUAL DATA OBTAINED ON COMPRESSING MIXTURE

	A	B	C	D	E	F
Total Mixture	.866	2.46:1	1	—	—	1

The values calculated for the total mixture are those we would expect to obtain on maximum compression of the powder mixture. The actual results obtained correspond very closely to the calculated prediction, except for the disintegration rate. The actual disintegration rate will probably never exceed the predicted rate, but may be considerably less, due to the dispersion of the disintegrator throughout the entire mixture.

As for the practical applications of this technique and the data acquired thereby, some of the following points may be cited:

1. *Choosing method of granulation.* This technique indicates whether dry-slugging of a tablet formula is feasible, or if wet granulation with a binder is necessary because of the poor compression character of the materials concerned. This, of course, obviates the many trial and error test granulations that would be necessary with any new mixture.

2. *Choosing fillers, disintegrators, and lubricants.* By referring to the data presented in TABLE 1, the formulator has available information making it possible to predict within limits the relative thickness, disintegration, and ease of compression of a tablet resulting from a powder mixture. For example, if the active ingredient of a tablet formulation has a very slow disintegration rate, then, in choosing a filler for this formula, lactose would be indicated, since compressed lactose disintegrates within one minute by itself.

If the active ingredient of a tablet formula exhibited very difficult ejection from the die in forming the test slug, then a filler such as dibasic calcium phosphate would be indicated, because it by itself has a relatively easy ejection character, as shown in TABLE 1, column B. However, the disintegration rate of compressed dibasic calcium phosphate is prolonged (30+ minutes), thereby indicating that additional disintegrator such as starch is necessary in the formula. Accordingly, it behooves the formulator to choose the neecssary ingredients of a formula by correlating the characteristics of the materials involved with the properties desired in the compressed tablet. Obviously, not every material has been included in TABLE 1. It is merely the purpose of this paper to report the method used to obtain this data. New materials should be added to those presented, thereby increasing the scope of this work.

3. *Formulating new medicinal compounds.* As

(*Continued on page 679*)

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TRADE LITERATURE

Water Demineralizers. Barnstead Still and Sterilizer Co., 2 Lanesville Terrace, Boston 31, Mass—5-pg. bulletin (#154) describes the complete line of cartridge-type water demineralizers for research laboratory and industrial use. Disposable cartridges in models up to 1500 gallons per hour are featured.

Silicones. Silicones Div., Union Carbide Corp., 270 Park Ave., N. Y. C. 17—15-pg. illus. booklet describes silicones, their uses, and suggests new applications. Included is a series of charts covering the properties and features of Silicone fluids, resins, rubber compounds, water repellents, anti-foams, and emulsions.

Private Label Aerosols. G. Barr & Co., 3601 South Racine Ave., Chicago 9, Ill.—illus. brochure describes the services of the company including counsel, formulation, production, and quality control of aerosol packaging.

Vitamin A Plant. Hoffmann-La Roche Inc., Nutley 10, N. J.—10-pg., illus. brochure describes the highlights of the company's vitamin A plant. It also describes beta carotene, a yellow coloring agent used as a companion product.

Heat Exchanger Series. American-Standard Industrial Division, Detroit 32, Mich.—6-pg., 3-color, illus. technical bulletin (301.7K1) describes the new C-200 heat exchanger series featuring standard pre-engineered components combined into custom-built assemblies. Applications and engineering features of these exchangers, which hav straight tubes and fixed tube sheets with shell sizes from 8-inch through 42-inch and in any practical tube length, are discussed. Specifications, variations in baffle spacing, materials, tube diameter, tube length, tube side passes, mounting positions, and shell-side nozzle orientation are given.

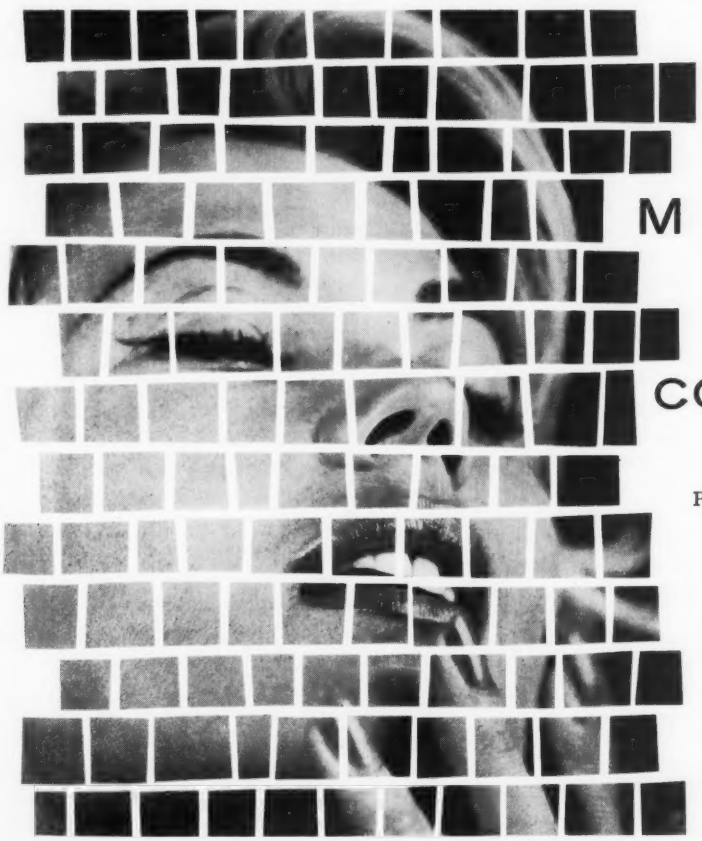
Hammer Mills. Young Machinery Company, Inc., Muncy, Pa.—8-pg., illus. technical catalog (49-A) describes line of Robinson heavy-duty hammer mills and screen-type pulverizers. Dimension tables are included.

Package Casing. Food Machinery and Chemical Corporation, Stokes & Smith Plant, 4900 Summerdale Avenue, Philadelphia 24, Pa.—8-pg., illus. brochure describes 13 automatic and semi-automatic Sure-Way Caser models. Specifications on set-up machines, loaders, and sealers are included with floor plan drawings. Line drawings show operational sequence of positioning, assembling, elevating and loading into top-open, side-open or end-open shipping cases. The various possible single- and multiple-tier patterns handled are shown.

Flow Metering Applications. B-I-F Industries, P.O. Box 276, Providence, R. I.—8-pg., illus. bulletin (100.20-1) itemized ten differential producers for metering applications.

Touch Button Tape Machine. Better Packages, Inc., Shelton, Conn.—4-pg., illus. reprint from *Protective Packaging* provides information on the latest method of in-line mounting of electric tape machine for production taping.

Dry-Type Air Filter. Dept. PD, American Air Filter Company, Inc., 215 Central Avenue, Louisville 8, Kentucky—Bulletin (#228) describes the uses, construction, installation, operation and holding frame arrangements of the new Dri-Pak dry-type unit air filter. Also included are dimensional drawings, performance data, space requirements, and suggested specifications.



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Behind The Markets

ESSENTIAL OILS

Trading on the essential oil market has been fairly well maintained. A few more dealers have stopped handling sandalood oil because of its exceptionally high price, so that now the lowest quotation that can be found is $26.00 per pound. Prices up to $30.00 per pound are being quoted. Previous to the current upswing, prices had fluctuated roughly between $9.00 and $16.00 per pound. As high as the price is, Indians are said to use it extensively to anoint their bodies. Peppermint, spearmint, and vanilla beans are soft. Bois de Rose is steady. There have been price gains in both caraway and dill oils on reports that yields are much lower than usual. American cedarwood oil continues to increase in cost, and the Keyna oil is still in short supply.

VANILLA BEANS

A rather tense situation between the vanilla bean exporters in Madagascar and the government there has caused dealers in this country to withdraw offerings of Bourbon material. According to reports from dealers, the Malagasay government has temporarily suspended the issuance of new export licenses. The government did this when they found out that some exporters were charging under the official price for vanilla beans. The government intends to withhold issuance of new export licenses until it can arrive at a more effective method of enforcing its export price regulations. In the meantime Mexican beans continue to be available at previous prices

BOTANICALS

Routine activity characterized the market for most botanicals, with prices remaining firm. Expected arrival of new crop materials next month could cause a few fluctuations. Generally supplies of imported items, with agar a notable exception, are adequate. Domestic botanicals, on the other hand, continue in short supply.

•LEMON OIL•

A sudden and very drastic change has come over the market for lemon oil. From a price basis that has been particularly favorable to consumers and the lowest for many years, there is now an active rising price market. From a condition in which consumers and purchasers only a few months ago found a heavy abundance of lemon oil and an overwhelming supply, all of a sudden a shortage has developed. Most serious of all, from a secure contract position and a market that was eminently a buyers' market, suddenly buyers are faced with an announcement by the largest producer with a force majeure statement for their contract. A release by dealers states: "Deliveries against existing contracts are limited to monthly shipments up to one-twelfth the original contract quantity at contract price. All other deliveries will be subject to ability to supply."

The price range of from $1.25 to $1.50 per pound, which has prevailed since February, 1960, was reported to be the lowest since the depression. Factors in the market frankly stated that such prices for lemon oil are ridiculous and that the market was bound to rise. It did, suddenly and drastically. The California Citrus Growers' oil is now being sold at a price range of from $1.85 to $1.95 per pound, with independent producers quoting as high as $2.50.

Only a few months ago lemon oil was reported to be a glut on the market. The surplus was partly caused by increased production and the consumption of frozen fruit juice, and by the development of better distillation equipment which increased the yield of oil. But what has happened to the supply position at the source—where did all the reported lemon oil go?

For one thing, large consumers fully realized that prices were so low they could not do anything but go up. Excellent buying for replacement and inventory used up a good part of the surplus. Also new users were stockpiling at the exceptionally low price levels and consumers who switched to synthetics and imitation oils returned to the natural product, which they prefer when prices are low. This is a usual development when it is considered that lemon oil is more normally priced at a range of from $7.00 to $8.00 a pound.

But where does the market go from here? The 1959-60 crop of lemons amounted to 38,000 freight carloads. The production of fruit depends greatly on ample rainfall. The 1960-61 growing season in California was reported to be the dryest in many years. New crop yield, therefore, is not expected to exceed 30,000 carloads, a substantial decline.

In some quarters there is speculation that the price rise in lemon oil is just the beginning of an upward pricing situation.

One other factor must be taken into consideration in relation to the future price trend of lemon oil. The California Citrus Growers, Products Department is by far the largest producer of oil. This organization is a cooperative group of independent citrus growers and is therefore not a monopoly, although they can do pretty much as they please without any Government restrictions. They do supply about 70 per cent of the market for lemon oil. One other cooperative group of products and some independents supply the balance.

One independent stated that he has 19,000 acres of lemon groves and that pressure is brought via price by the cooperatives to keep him out of the market. If this be the case, future pricing of lemon oil will to some extent depend on how much oil the independents can produce and market at prevailing price levels.

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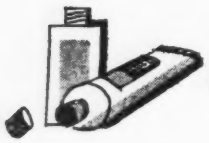

Advancing Therapy

Anabolic Steroid

A new synthetic steroid, tradenamed Anadrol, generic name oxymetholone, has been introduced by Syntex Laboratories, Inc. for use in stimulating weight gain and building muscle tissue. It has been designed to produce an improved effect in reversing tissue breakdown and providing solid weight gain without a corresponding increase in undesirable side effects. The chemical name of the steroid is 2-hydroxymethylene-17-*alpha* methyl-17-*beta* hydroxy-3-antrostanone.

Antispermatogenic Compound

Complete arrest of sperm production was achieved in rats following the use of a new compound, WIN-18446, orally. The compound had no effect on male hormone production, according to Drs. G. O. Potts, D. F. Burnham, and A. L. Beyler of the Sterling-Winthrop Research Institute, where the compound was first prepared for testing as an amebacide. WIN-18446 is N,N'-bis(dichloroacetyl)1,8-octamethylenediamine.

A number of investigators have been conducting clinical trials during the past year and have noted significant spermatogenic effect, but the compound will require considerable further study to determine whether a practical product will develop. In the tests reported, the compound was administered orally to a group of 30 male rats for a period of 12 weeks, with 10 others serving as controls. Each of the 40 male rats was mated with three reproductively mature females; none of the female rats mated with the medicated rats became pregnant.

Dr. John MacLeod, of the Cornell University School of Medicine, tested the same drug on 60 male volunteers in a penitentiary and it appears to have promise as a cheap, safe oral contraceptive for men. The studies showed that the drug completely suppressed sperm production within 70 days when taken at the rate of one gram daily. No loss of male sex drive was noted. Full recovery of fertility was found to occur within roughly 100 days after the drug was withdrawn. The penitentiary inmates have taken the drug for eight months and showed no serious or lasting effects; side effects were flatulence and slight dizziness early in the course of treatment and enhancement of the effect of alcohol.

New Steroid Hormones

The first new corticosteroid in more than 2½ years has been introduced by Schering Corporation. Known as Celestone, the anti-inflammatory, anti-allergic steroid is indicated for short-term therapy in the areas of allergy, dermatology and ophthalmology, as well as long-term rheumatic conditions.

Celestone, identified chemically as betamethasone, has undergone extensive clinical trials during the past twenty months. Studies indicate that it affords a greatly increased anti-inflammatory effect with lower dosages, and certain undesirable side effects are not discernible in most patients receiving usual therapeutic dosages.

Sodium retention is characteristically associated with older corticosteroids. However, Celestone has been found to produce an increase in sodium excretion. The new drug is particularly recommended for patients who have shown a lessening response to other anti-inflammatory steroids and may be useful for those who have developed severe side effects on previous hormonal therapy.

A new oral corticosteroid of marked potency and predictable anti-inflammatory effect is being introduced by Eli Lilly and Company under the trademark Haldrone (paramethasone acetate, Lilly). Clinically it has been shown to be well tolerated, the incidence of significant untoward reactions being low.

Haldrone is approximately ten times as potent an anti-inflammatory agent as hydrocortisone. Chemically, it is 6α-fluoro-16α-methylprednisolone 21-acetate.

Extensive, long-term clinical metabolic studies have shown that at ordinary dosage levels Haldrone has little effect on electrolyte metabolism. Sodium retention is unlikely, and, with average maintenance dosage, only minimal changes occur in regard to sodium and potassium excretion.

Anti-Cancer Drug

The following is abstracted from the package literature issued by Eli Lilly and Company for Velban (vinoblastine sulfate, Lilly), apparently useful in the treatment of Hodgkin's disease and choriocarcinoma

Velban (vinblastine sulfate, Lilly) is an alkaloid extracted from Vinca rosea Linn., a common flowering herb known as the periwinkle. It represents an entirely new class of oncolytic drug and has been found particularly useful in the treatment of Hodgkin's disease. Velban has been used for the palliative treatment of some malignant neoplastic conditions, but there is no evidence that it has in any instance cured human cancer. In susceptible cases, Velban has produced temporary reduction in the size or temporary disappearance of some tumors, relieved pain and other symptoms, and allowed some patients to regain appetite and weight. Such periods of remission have varied from patient to patient.

Chemical and physical evidence indicates that Velban has the empirical formula $C_{46}H_{58}O_9N_4$ and that

it is a member of a new class of dimeric alkaloids containing both indole and dihydroindole moieties. The exact structural formula remains to be determined.

The mode of action the drug is still under investigation. However, Johnson and associates have presented data from tissue-culture studies which seem to indicate an antimetabolic action, probably connected with cellular glutamic acid utilization. Palmer et al. have also demonstrated that treatment of neoplastic cells with Velban in vitro has resulted in arrest of their division at the stage of metaphase.

Velban has desirable activity against susceptible tumors together with a relatively low incidence of thrombocytopenia and side-effects.

Although Velban is being used on an experimental basis for the treatment of a wide variety of neoplasms, the drug is not recommended for the treatment of conditions other than those mentioned below until more data have been accumulated. When an accurate diagnosis has been established, a complete evaluation has been made, and a history which includes a review of previous therapy has been obtained, then the use of Velban may be considered for the treatment of:

1. Generalized Hodgkin's disease
2. Choriocarcinoma resistant to other available therapy

Velban may be used for the treatment of generalized Hodgkin's disease, especially those cases which are unsuitable for local surgical or radiotherapeutic treatment, or for those patients with localized Hodgkin's disease who have failed to respond to local surgical and radiotherapeutic measures.

Until more is known of the efficacy of Velban relative to the conventional therapy for choriocarcinoma, this drug should be reserved until other treatment has failed.

The effectiveness of Velban in the treatment of other neoplasms has not been finally established. Carefully controlled studies are now in progress to elucidate further the full spectrum of activity.

Velban has been administered to thirty-nine patients with Hodgkin's disease, thirty-four of whom were evaluable. Thirty-one of these (91 per cent) responded favorably to the drug; the majority (85 per cent) had previously failed to respond to other available methods of therapy. At least 50 per cent of the patients who responded showed either complete disappearance of all evidence of the disease and clinical remission or not less than 75 per cent reduction in the size of abnormal masses and a general improvement in clinical condition. With regularly administered doses of Velban at weekly or biweekly intervals, 68 per cent of the patients continued to respond for several months without relapse by the time of reporting. Only 10 per cent of the patients relapsed in spite of adequate maintenance dosage.

Of ten patients with choriocarcinoma who were treated with Velban, nine were evaluable. In seven, some antitumor effects were demonstrated. Five of these patients obtained clinical remission of their disease. In four, the remissions continued for several months to the time of reporting with regular maintenance doses of Velban given as frequently as the leukocyte count would allow. All of the patients had previously become refractory to other available therapy.

In general, the incidence of side-effects attending the use of Velban appears to be related to the size of dosage employed. In no case did the drug have to be discontinued because of side-effects among the first 176 patients treated. With the exception of epilation, side-effects have not usually persisted for longer than twenty-four hours.

The record of 176 patients yielded the following figures for the incidence of side-effects: nausea, 18.5 per cent; epilation, 9.5 per cent; temporary mental depression, 12.5 per cent; vomiting, 8.3 per cent; malaise, 7.7 per cent; paresthesia, 6 per cent; phlebitis, 6 per cent; temporary loss of deep-tendon reflexes, 4.8 per cent; anorexia, 3.6 per cent; and diarrhea, 2.4 per cent. Vesicular stomatitis, vesicular dermatitis, headache, epistaxis, bleeding from an old peptic ulcer, and ileus all occurred in only one or two of the 176 patients studied.

Nausea and vomiting have usually been easily controlled by antiemetic agents. Mental depression so far has not been accompanied by thoughts of suicide. When epilation has occurred, it has frequently not been total; and, in several cases, hair regrew while maintenance therapy continued.

Dioxone Analeptic

Dioxone (5,5-diethyl-1,3-oxazin-2, 4-dione) is a new substance possessing convulsant properties qualitatively similar to leptazol and bemegride. Its convulsant properties have been studied quantitatively in mice and rats by G. Mafii, V.M. Dezulian and B. Silvestrini (*J. Pharm. Pharmacol*, 13. 244, 1961). By comparison with the other two analeptics, dioxone shows the highest ratio of lethal to convulsive doses. Dioxone is active orally in mice, rats and dogs. Experiments on spinal cats and rabbits have shown that it does not act on the spinal cord. In the decerebrated animals its effects appear limited and inconsistent. It has a relatively low toxicity, is well tolerated by rats and dogs when administered for up to 6 months either subcutaneously or orally.

Preventing Seasickness

Several drugs were tested, some of them for the first time, against seasickness in military personnel on transport ships on the North Atlantic ocean by R. Trumbull et al. (*Clin. Pharm. and Ther.* 1: 280, 1960). All of the drugs were given three times a day. Of the new ones tested, phenglutarmide 2.5 mg. and cinnarazine 7.5 mg. were significantly effective on a single trip. Atropine and orphenadrine were somewhat less effective. Ineffective drugs were procyclidine, diethazine, cycrimine, caramiphen, phenipra-zine, nialamide, phenelzine, benactyzine, and promazine. Cyclizine and meclizine, in doses of 50 mg. three times a day, were again found to be effective.

Deanol Stimulant

In a double blind study in normal young adult human males by H. B. Murphree, Jr., C. C. Pfeiffer, and I. A. Backerman (*Clin. Pharm. and Ther.* 1: 303, 1960), doses of 10 to 30 mg. of diethylaminoethanol produced statistically significant subjective changes in mental concentration and muscle tone. It also produced nonspecific but significant alteration of sleep habits, such as sounder sleep, less sleep needed, and clear-minded awakening. No untoward effects were encountered and laboratory tests disclosed no gross changes from normal.

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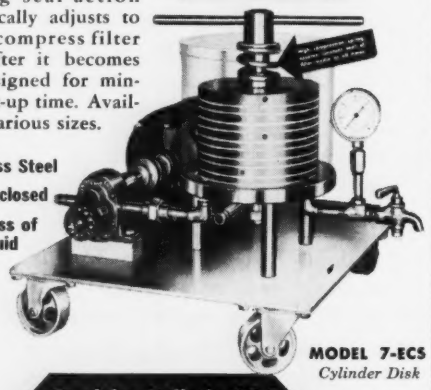

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(Continued from page 615)

advantageous to have the foreign company actually owned or controlled by a national of that country. While this does not guarantee exemption from seizure by the local government, the chances are that seizure is less likely to come to foreign companies that are not controlled by outsiders. Of course, the technical exchange agreement is not a cure-all for the problem of a small business. It may well involve some very serious problems.

A Cleveland lawyer, Thomas E. Fisher, has studied the problem and has made what appears to the writer to be some worthwhile practical suggestions. The first problem is to select a potential foreign license whose credit rating, reputation, facilities and net worth, among other things, are satisfactory. The agreement should then be worked out. Objectives to be served by the agreement are:

1. A workable, long-term agreement with sufficient flexibility to permit change to meet changing conditions;

2. Adequate and absolute control over his trademarks, trade names, good will, patents, and know-how;

3. An agreement that provides a return which is not only reasonable but also recoverable; and,

4. A clear definition of the rights, obligations, and duties of both of the parties.

Fisher makes the suggestion that, before commencing actual negotiations, the small manufacturer should prepare a check list of factors to be considered and should keep this check list before him at all times during the negotiations. Obviously, no check list will be appropriate for every situation. Each case has its own special aspects. Even so, the check list may well be of help generally; and therefore it is given below in Mr. Fisher's own words:

1. The agreement should very definitely spell out required performance and at the same time it should provide a means for revision. By "revision" is "meant modification of the terms of the agreement to meet changing needs or conditions.

"2. The contract should have a fixed long term; but, at the same time, it should have periodic predetermined times during which either party can 'escape.' It is indeed often desirable to have a one- or two-year trial period to afford an opportunity to work out problems which simply cannot be anticipated in advance and to determine whether or not this is a marriage which can be perpetuated.

"3. The contract should be executed in the United States. It should include a clause to the effect that the law of the State in which the American manufacturer is located will be controlling.

"4. The agreement should specify that the licensee is to pay all taxes, obtain all governmental licenses, and in all respects comply with regulations imposed by the governments of each and every country included in the trading area covered by the agreement.

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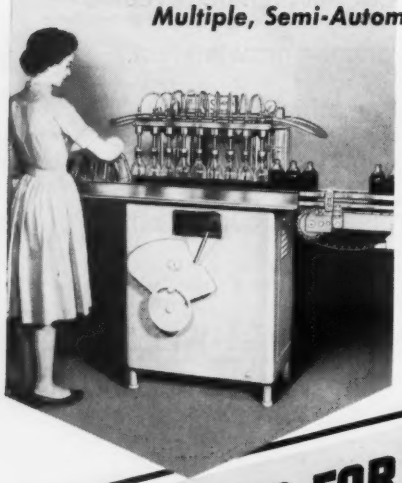

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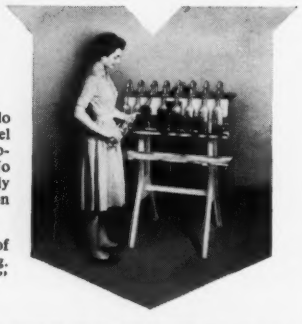

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"5. A very stringent and exact trademark agreement should be included. This would require that all products bear the trademark of the American licensor, that any and all trademark notice required by the countries concerned be included, that whatever trademark rights the licensee may require will terminate at the termination of the agreement. The agreement should provide that the licensee will not sell competitive products under his own trademark during the course of the agreement. Thus, all products should bear a trademark of the American licensor and the appropriate trademark notice.

"6. Many countries require so-called registered user agreements. This means an agreement setting forth the fact that a given manufacturer has been licensed to use a given trademark must be registered in the patent office of the country under consideration. It is helpful to have a separate short registered user agreement to satisfy this requirement while, at the same time, preserving the confidential nature of the over-all technical license agreement.

"7. The agreement should not grant rights under the American manufacturer's trade name. Once the American manufacturer allows the creation of a licensee manufacturing company using the same or a similar trade name, the licensor's identity may well be lost in that country and it may be extremely difficult, if not impossible, to recover the trade name at the conclusion of the license agreement.

"8. The agreement should provide for control by the American manufacturer of all design changes, technical modifications, etc. It is usually desirable to accompany these limitations with a requirement that the foreign licensee disclose all technical improvements the licensee may make and the American licensor should retain the right to determine whether or not these improvements should be used.

"9. The rights of the licensee should not be assignable without the written consent of the licensor. These contracts are rather personal in nature and certainly it is essential to maintain control over the persons or organizations with which the American is doing business.

"10. The agreement should specifically specify whether or not sub-licensing will be permitted. Normally, sub-licensing should not be permitted unless it is with the written consent of the American licensor.

"11. A procedure for re-negotiation of the agreement to modify it to meet changing conditions should be spelled out.

"12. The American licensor should be certain that in the event of termination all patents, trademarks, and other technical assets are assigned to the licensor.

"13. While agreements sometimes provide for the re-acquirement of know-how, these agreements are normally rather nebulous and hard to police. The agreement can, however, set forth a requirement that know-how must be kept confidential and recognize that the know-how is received on a confidential

Homeostasis is a term describing the maintenance of the "normal" in the human body. It becomes a truly fascinating concept when you realize how all reflexes tend to keep blood pressure, heart rate, body temperature and the composition of the blood constant. It is only when the "odds" become too great, and the reactions of the body fail to preserve homeostasis, that sickness results. The pharmaceutical industry works to restore this health, and we in D&O play our part also, providing experts who know pharmaceuticals and **flavor technology.** Let the D&O Flavor Laboratories add to your medicinal the **taste** of good health, a taste becoming more and more important in the sale of today's pharmaceutical products.

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basis.

"14. The terms and conditions under which the American manufacturer will send personnel to the trading area of the licensee should be set out. The agreement should limit the number of personnel which will be sent, require reasonable warning that the licensee will require the services of such personnel, and specify what part of the expense of these visitations will be borne by the licensee.

"15. While a technical exchange agreement presumably provides that the licensee will have the exclusive right to manufacture and sell products under the trademarks and with the know-how of the licensor in his market area, the agreement must have an exception providing that the licensor has the right to export goods to the market area until the licensee is manufacturing at a level satisfactory to meet the requirements of the licensor's customers in the trading area.

"16. The size of the trading area must be determined. The agreements should clearly and exactly spell out the countries which are to be included in this trading area, based primarily on considerations of whether or not the American manufacturer is equipped to supply the market in a given country and assuming the American is not, whether or not the licensee is. This phase of the agreement must be given extremely careful consideration and study. If it is not handled properly it may well lead to a violation of the antitrust laws of one of the countries under consideration.

"17. It is sometimes desirable to provide for the exchange of royalty income for a stock interest in the licensee manufacturing organization. This provides long-term stability, and assists in maintaining control of the venture. It also provides increased capital of th licensee company and a growth in the assets of the licensor.

"18. The agreement should include a minimum guarantee clause providing an assured minimum annual return. The agreement must also, of course, provide for a fair and reasonable royalty rate.

"19. The licensor should retain the right to cancel the agreement if it is impossible to get cash out of the licensee's country.

"20. The licensor should retain the right to inspect the licensee's manufacturing facilities periodically.

"21. The agreement should provide for periodic production and sales reports. These reports should be full and comprehensive.

"22. The agreement should automatically terminate if the licensee becomes bankrupt.

"23. The agreement should prohibit the licensee from making warranties as to the product sold under the licensor's trademarks unless the warranties have been specifically approved by the licensor.

"24. Any and all advertising or promotional literature should be subject to prior approval by the

(*Continued on page 678*)

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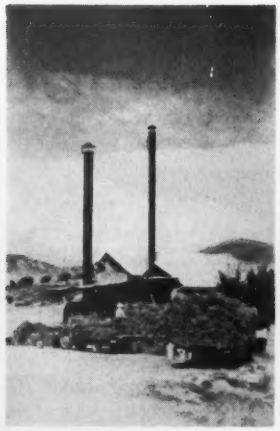

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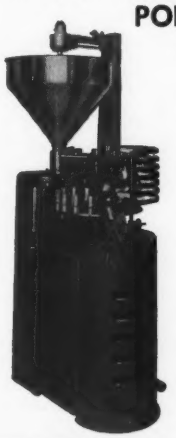

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Pharmacology (The Nature, Action and Use of Drugs), *by Harry Beckman, M.D., Chairman, Departments of Pharmacology, Marquette University Schools of Medicine and Dentistry, Second Ed., 805 pp., W. B. Saunders Co., Phila. (1961), Buckram,* **$12.50.**

This is a textbook for the undergraduate medical student, who can devote but a short time in his career to prepare for the pharmacologic aspects of the practice that lies ahead. It is written in three distinct portions. In Section I the attempt is made briefly to orient pharmacology among the other preclinical disciplines. Section II presents a description of the broad background of the science and an exposition of the bases from which advances are made. Section III, which comprises the major part of the text, offers combined discussions of the actions and actual uses of drugs in an arrangement designed for direct serviceability from the pharmacotherapeutic standpoint.

Scientific Thinking and Scientific Writing, *by Martin S. Peterson, Chief, Technical Services Office Quartermaster Food and Container Institute for the Armed Forces, Chicago, 215 pp., Reinhold Publishing Corp., New York (1961), cloth,* **$6.95.**

This book places strong emphasis on integrating logical and scientific methods with the actual organization of scientific writing. Dr. Peterson explains the uses of traditional inductive reasoning in scientific thinking, along with the special methods of representative sciences—biochemistry, physics, the specialized industrial fields, mathematics, and the likes. Helpful suggestions are offered on the business of 'professionalizing" oneself, and the technique of objective criticism of one's own writing is explained. Contents: 1—The Genesis of Scientific Thought and Writing; 2—Classic Methods of Inductive Reasoning and Their Application to the Organization of Scientific Articles and Reports; 3—Some Specific Methods and Techniques and Their Relationships to Experimental Design and the Interpretation of Data; 4—Building a Professional Background for Scientific Writing; 5—Types of Scientific Writing and Thinking.

Drugs And Behavior, *Edited by Leonard Uhr, Research Psychologist, and James G. Miller, Professor of Psychiatry and Psychology, 676 pp., John Wiley & Sons, Inc., New York, (1960), cloth,* **$10.75.**

This book deals with a problem of paramount importance in present-day drug research: the effects of psychoactive drugs (tranquilizers, energizers, psychotomimetics, etc.) on human behavior and experience. Chapters are of two general types: those discussing general theoretical and methodological issues involved in drug research, and those reporting on specific researches conducted by the contributors. Thus, the book not only reviews and summarizes important work already done in psycho-pharmacology, but also sets forth the various conceptual and methodological frameworks pertinent to the study of psychoactive drugs.

Nucleic Acid Outlines, Vol. I, Structure and Metabolism *by Van R. Potter, Professor of Oncology, McArdle Memorial Laboratory, University of Wisconsin,, 292 pp., Burgess Publishing Co., Minneapolis (1960), cloth,* **$5.**

These outlines have been prepared as an adjunct to a course entitled Nucleic Acids, Chemistry and Function, which the author has presented since 1955 at the University of Wisconsin. The present volume is intended to provide a minimal background and a handy reference guide to the basic biochemistry of the nucleic acids. Chapter 1—Historical Introduction to the Nucleic Acids; 2—Structure of Bases, Nucleosides and Nucleotides; 3—Structure of RNA and DNA; 4—Cytochemical Distribution of Nucleic Acids; 5—Biosynthesis of Sugar Moieties; 6—Biosynthesis of Purine and Pyrimidine Nucleotides; 7—Biosynthesis of RNA and DNA; 8—Catabolic Pathways Competitive to Biosynthesis; 9—Synthesis and Function of the Nucleotide Coenzymes.

The Chemistry of The Terpenes, *by A. R. Pinder, B.Sc., Ph.D., Senior Lecturer in Organic Chemistry, University College, Cardiff, Wales, 223 pp., John Wiley & Sons, Inc., New York (1960), cloth,* **$8.25.**

The most important function of this book is to act as a bridge between the general textbooks of organic chemistry and the comprehensive works on terpenes which are available. Particular stress is laid on the reactions involved in degradation and synthesis, the interesting chemical transformations encountered in the field, and some of the more recent developments concerning stereochemistry and biosynthesis. Contents: Chapter 1—The Essential Oils; 2—Determination of Structure; 3—Acyclic Monoterpenes; 4—Monocyclic Monoterpenes; 5—Bicyclic Monoterpenes; 6—Sesquiterpenes; 7—Diterpenes; 8—Triterpenes; 9—Tetraterpenes; 10—Rubber and Related Compounds; and 11—Biogenesis of Terpenes.

The Health Hucksters, *by Ralph Lee Smith, 248 pp., Thomas Y. Crowell Co., New York (1960), cloth,* **$3.95.**

False and misleading advertising persuades the American public to spend more than $1,000,000,000 a year for foods, drugs, and cosmetics that have no real benefit, according to the statements of the author of this book. Documented by the testimony of medical experts and the actions of the federal government, this book tells the story behind the scandal, and lays bare the causes of its existence. Contents: Chapter 1—The Health Hucksters; 2 — The Gold Rush in Vitamins and Minerals; 3—Big Firms Lead the Way—Dentifrices and Cold Remedies; 4—Fact and Fiction about Your Weight; 5—Advertising and Your Heart; 6—Putting the Heat on Your Doctor—Ethical Drugs; 7—The Arthritis Business; 8—Hucksters in the Saddle—The Cigarette Ads; 9—The Booming Food Fads; 10—Are Cosmetics Medicine?; 11—The Promoters at Work—An Inside View; 12—Modern Advertising vs. Horse-and-Buggy Law; and 13—Needed: A Consumer's Bill of Rights. After graduating from Swathmore College, the author worked at the National Better Business Bureau as an editor of the Bureau's monthly service, "Do's and Don'ts in Advertising Copy."

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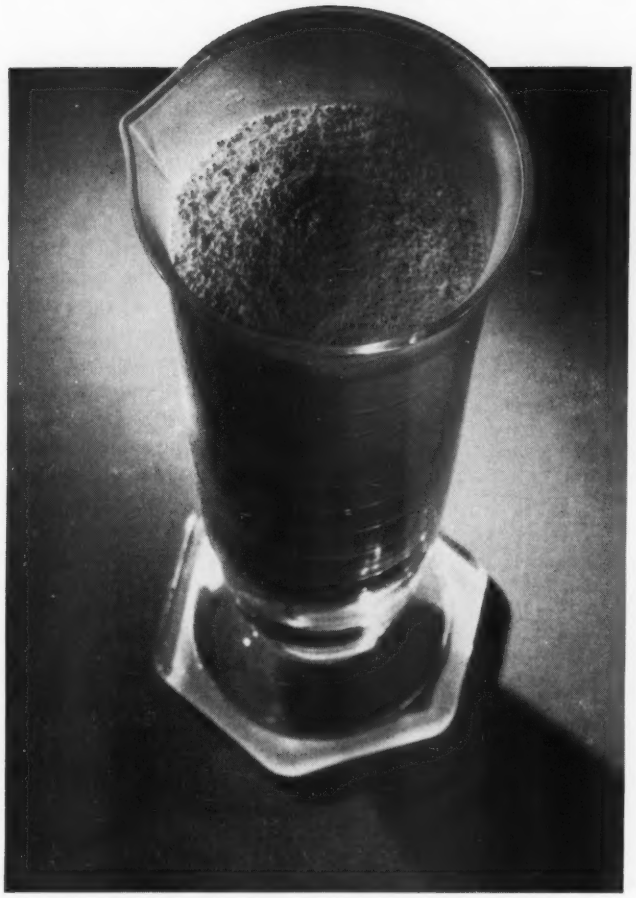

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***U.S. Patent #2,725,334 and foreign patents**

(*Continued from page 672*)

licensor. It is sometimes desirable to provide a minimum amount of advertising which must be run. This may either be a minimum fixed sum or preferably some minimum percentage of sales.

"25. It is usually desirable to provide for arbitration in the event of disputes. If arbitration is provided for the agreement should spell out the mechanics of arbitration including who the arbitrators will be or how they will be chosen.

"26. Include a 'momentum clause.' Such a clause provides that on termination of the agreement, the licensee has the right to sell out its inventory and the licensor will receive royalties on these goods sold out of inventory.

"27. The licensor should retain the right to set the standards of quality of the products sold under his trademarks.

"28. The obligations of each party should be spelled out in detail such as when and where a manufacturing facility is to be constructed, what monies are to be expended and by whom, and when the licensor's employees will be required in the licensee's country to assist in this endeavor.

"29. The agreement should provide that the licensee will cause its employees to sign invention agreements providing for the assignment of any and all inventions pertaining to the licensee's business to the licensee.

"30. The agreement should also provide that inventions made by the licensee will be disclosed to the licensor. The mechanics for obtaining patent protection should be clearly and exactly specified. It should spell out who will own the patents, in what countries, who will pay the costs of obtaining them, and the like.

"31. Consideration should also be given as to whether patents should be in a separate agreement from the know-how and trademark license agreement. This may be desirable either because it may be advantageous tax-wise to sell rather than license the patents and/or the know-how. Under the laws of some foreign countries, it is also desirable because the entire agreement may expire when the patent expires. Further, with separate agreements, the know-how agreement, if not for an initial large lump sum, may be for a long term to provide for a fair return and the suggested trial period may apply to only the trademarks and/or the patents.

"32. The agreement should preferably be for a relatively long term, to amortize the value of know-how and other expenses over a long period of time. Thus the 'escape' noted above should be relatively widely spaced.

"33. The contract should include the usual clause admitting validity of any and all patents, trademarks, copyrights, etc., owned by the licensor in the licensee's trading area. This clause shall provide that the licensee shall neither contest nor assist others to contest the validity of any of the licensor's ex-

clusive properties in the trading area.

"34. A clause should also be included which would provide for appropriate patent and copyright notice on each product, in addition to the trademark notice mentioned above.

"35. The agreement should provide for a continuous interchange of know-how so that the licensee will always be reluctant to terminate the agreement because of continuous disclosure of new technical information. In this connection, it may be desirable to transmit know-how to the licensee on a continuous and selective basis so that the licensor always has something more to disclose to the licensee if and when current of discontent are detected.

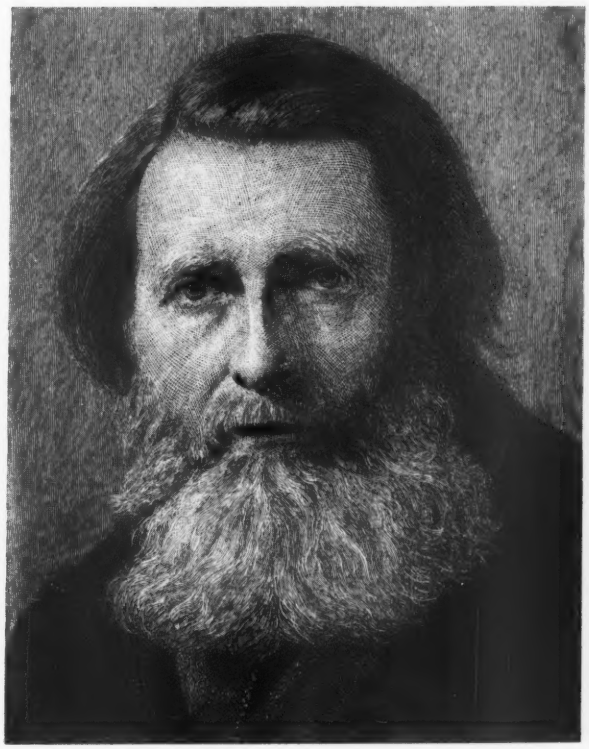
"36. Once a tentative agreement has been established, it should be reviewed by a carefully selected attorney in the licensee's home country to be sure that it does not violate any of the laws of that country.

"With the preceding check list the average American manufacturer will be equipped to obtain a reasonable, safe, and fair technical license agreement. He should not, however, forget that if he is entering a new market through the vehicle of a technical license agreement, many of the usual and normal problems faced by the manufacturer entering a new export market are still present. If he has not been careful to register his trademark in advance, he can find himself in serious difficulty in many foreign countries. The same is true if he has not obtained patents on at least the more important inventions which his company may have manufactured and patented in the past. He may even find that a national of this new country has obtained patents on some of the American inventions or perhaps registered the trademark of the American manufacturer. He may find his trademark lost if he attempts to license without first registering. Obviously, these and other pitfalls of foreign business are not eliminated because one has a technical license agreement."

(*Continued from page 662*)

new medicinal compounds are submited to the pharmacy department for formulation, it has been found very valuable to subject them to this compression technique in order to determine their characteristics under pressure. This data is recorded and kept on file in the tablet department. Accordingly, when it is requested that tablets be prepared of a new compound, the necessary information is available, and the tablet formulation work can be carried out directly, without delay and unnecessary experimentation, by referring to this compression data.

4. *Potentiating existing tablet formulas.* Quite often it is requested that other ingredients such as potentiating medicinal agents or buffers, for example, be added to an existing product. By determining the compression characteristics of these materials, it can



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be foretold whether the same method of manufacture can be used in preparing the tablet formula, or if, due to entirely different compression characteristics of the new ingredients a different method of manufacture of the tablet granulation will be necessary. The V/v ratio of the new material to be added will also be an indication as to whether a larger punch size would be necessary for the new tablet formula.

The question arose as to the effect of granule formation upon the resultant compression character of a compound. With this in mind, certain typical materials were processed by the dry-slugging method. With the aid of a Cenco-Meinzer sieve shaker, granulations of various sizes ranging from 12 to 200 mesh, were isolated. Compression studies of these materials indicated that, although the previous compacting of the powders produced changes in the volumetric fill weight and the ratio of the die fill to the compressed slug, the ejection difficulty and sticking qualities of any given material remained relatively constant regardless of the particle size. As for laminating tendencies, the results indicate that, although granules of any given material may possibly bond to each other more effectively than particles of a fine powder of the same material, these tendencies will remain inherent in the material, and will require treatment with extraneous binders and excipients to form a solid-textured tablet. To illustrate this point, alkaloidal caffeine was used as a compound having laminating tendencies, and aspirin as one having good compression characteristics.

TABLE 4
EFFECT OF PARTICLE SIZE ON COMPRESSION CHARACTERISTICS

Caffeine Alkaloid, anhydrous	12-40 mesh	40-120 mesh	120-200 mesh
Fill weight	1.05 gm.	1.00 gm.	.651 gm.
V/v ratio	2.1:1	2.1:1	3.2:1
Ejection difficulty	—	—	1
Lamination	+	+	+
Sticking	—	—	—
Acetylsalicylic acid			
Fill weight	.918 gm.	.940 gm.	.809 gm.
V/v ratio	2.4:1	2.3:1	2.7:1
Ejection difficulty	—	—	—
Lamination	—	—	—
Sticking	—	—	—

It is recognized that anomalies may be encountered in applying this technique to formula development work. However, as more knowledge of materials used in tableting is acquired, the unpredicted variations from theory will become less frequent, making the development of a completely satisfactory tablet formula possible with the elimination of much of the time-consuming and wasteful trial and error methods usually employed.

Conclusion

By using the described method of determining the compression characteristics of individual substances used in tablets and the system whereby the compression characteristics of any powder mixture may be predicted, the worker can more accurately predict

the need for the nature of additional fillers, disintegrators, and lubricants in the development of any tablet formulation.

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APPRAISAL OF COSMETIC SAFETY

(Continued from page 594)

this elsewhere.[3] I should like to discuss two of the tests here, namely, the Schwartz-Peck and the Traub-Tusing-Spoor.

The oldest and best known of these procedures is the Schwartz-Peck technique, which is performed as shown in Table 6.

TABLE 6
Schwartz-Peck

1. Standard patch test for 48 hours, using both the new and an old formula on 200 subjects.
2. Site read for 3 days.
3. Rest period of 10 days.
4. Repeat standard patch test with both formulas.
5. A use test for 4 weeks by the same 200 persons with both formulas, on opposite sides of the body.

This is a reasonably good technique if—and I want to emphasize the "if"—it is done according to the recommendations of its original proponents. Unfortunately, to save time and cost, the Schwartz-Peck technique has been emasculated by (1) dropping the comparison with the old formula, and (2) not performing the use test. I do not believe that the emasculated version of the Schwartz-Peck technique has any merits.

To support this assertion, the study by Siegel and Meltzer is relevant.[8] In order to evaluate the Schwartz-Peck technique, Siegel and Meltzer employed it on products with which there was already considerable clinical experience at the time of their study. In other words, this might be termed a retrospective Schwartz-Peck test, in that the use test was made first, and then followed by the predictive procedures for irritation and sensitization. They chose for this purpose various Sopronol products. The results of their study are abridged in Table 7.

TABLE 7

Substance	Tests for primary irritant Reactions			Tests for sensitization Reactions			Usage tests on positive reactors Reactions		
	Number	0	+	Number	0	+	Number	0	+
Sopronol ointment	204	186	18	193	190	3	21	0	0
Sopronol base	214	213	1	193	191	2	3	0	0
Sopronol powder	205	190	15	191	189	2	17	0	0

After having run the tests for primary irritation and for sensitization and obtained a total of 41 reactors, Siegel and Meltzer had the reactors use the prod-

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uct. As is seen in TABLE 7 in the entries under Usage Tests, no difficulties were encountered. This result was to be expected, for the products had been on the market for some time and no particular untoward effects had been encountered. The results are illuminating. They show that, if this were a new product with which there had been no clinical experience, an emasculated Schwartz-Peck study—that is, merely the tests for primary irritation and for sensitization—would have condemned it. Surely the yield of positive reactors from these two procedures was far too high to believe the drugs could be employed safely. Yet, the truth of the matter is that the product does not cause difficulties under usual conditions of use.

It is not germane to this paper to consider in detail why such a discrepancy should have developed, nor am I certain that I could satisfactorily explain it; but I think an important contributing factor is the question of occlusiveness. Under the conditions of the occlusive patch tests, mildly irritating, volatile substances accumulate and, because they cannot escape, produce inflammation. Under conditions of usage where the products are not covered, the volatile materials escape, hence no skin damage is seen. I do not have an example that illustrates the failure of an emasculated Schwartz-Peck technique to predict that a product would cause trouble under actual conditions of use; but I would be reasonably certain that this has occurred. To sum up then, the Schwartz-Peck technique, as it was originally proposed, has a certain amount of predictive value, but in its abridged form it is almost a worthless procedure.

The Traub-Tusing-Spoor Combined Patch and Use Test is performed as follows: (1) Initial patches are applied; (2) these are read at the end of 48 hours to determine whether there is any immediate irritation or pre-existing sensitivities; (3) appropriate subjects are then given the material to use for three weeks; (4) the subjects are then given a two-week rest period; and, finally, (5) a challenge patch is done and read at the end of 48 hours. It is important to note that under the third heading "appropriate" test subjects are employed (that is, if the article is to be used for acne, then persons with acne are used for the testing, and so forth), and the product is to be applied as it is contemplated that it will be used. These are important and valuable features of this technique.[9]

The chief question about the Traub-Tusing-Spoor technique is whether a three-week use period provides sufficient time for the majority of users to become sensitized, assuming that they are going to be. In other words, how many more reactors would have been obtained if the product had been used for six weeks or for 60 weeks? Obviously, there is no definite answer to this query. From the point of view of practicality, the period cannot be dragged out too long, and there is theoretical evidence that a three-week period should be adequate. While an occasional person might become sensitized by longer contact, the

majority of persons who become sensitized will do so in the three-week period. From personal experience with the test, I have found it a satisfactory one.

One would like to know how well the predictive procedures employing humans stack up in practice. That is, how good is the correlation between what is predicted by a given procedure, and what happens when the product is put on the open market. Further, one would like to know how the various techniques compare. Is one of them more efficient, so that either we could use smaller samples or we could have greater confidence that the results obtained with this procedure would actually be borne out with the widespread use of the product? Unfortunately, such information does not exist.

To my knowledge, only one study has compared certain predictive techniques. This study by Traub, Tusing, and Spoor compared the results of testing six products with (1) a Landsteiner Guinea Pig Test, (2) an emasculated Schwartz-Peck Test, and (3) the Traub-Tusing-Spoor Patch Use Test. It was found that the results from the Landsteiner Guinea Pig Test and the Traub-Tusing-Spoor Patch Use Test correlated reasonably well; both of them showed that one of the products was a sensitizer, whereas, the Schwartz-Peck Test did not show this. It should be remembered, however, that the Schwartz-Peck Test employed was the abbreviated version, hence it cannot really be concluded that the Traub-Tusing-Spoor test is more likely to predict the development of sensitization under conditions of use than is the Schwartz-Peck procedure.

By photodynamic sensitization is meant that the use of the product enhances the effect of radiant energy on the skin, making a person more vulnerable to the sun's rays. A wide variety of compounds will do this from both internal and eternal exposure. In the case of cosmetics, so far (and I wish to emphasize the "so far"), oil of bergamot is the best known offender. With the cosmetic industry seeking new ingredients, sooner or later photosensitizers will be met.

These can be tested for by applying both the product in question and an appropriate control to the skin of test persons, who would then be exposed to radiant energy. The radiant energy should simulate the sun's rays as closely as possible, that is, it should run the gamut from about 2500 to about 4200 Angstrom units. Probably exposing the subjects to the sun itself is best, provided they are exposed to solar radiation of the same intensity. The exposure should be to reasonably intense sunlight, but precautions must be taken concerning individual variability with respect to burning and the possible adjuvant effect that the new ingredient may have. In testing for photodynamic effects, it is best to use the finished article rather than the isolated ingredient, as the incorporation of the isolated ingredient in the finished article may markedly affect its properties in this regard. The control would be the finished article without the

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As was stated initially, there are two components in appraisal—biological and statistical. I should now like to turn to the statistical side. It should be remembered that the first step in any investigation is the proper design of the experiment. In appraising cosmetics for safety, the experimental design is on the whole rather simple. But there are two important aspects to such a study that must not be overlooked. First, the population used must be representative, and, second, the test procedure must simulate use conditions. By a representative population is meant that the sample to whom the test is applied is a reasonable cross section of the ultimate population for whom the product is designed. This is one of the excellent features of the Traub-Tusing-Spoor Test, namely, that the product is used on persons with the condition for which it is contemplated that it will be employed. Admittedly, this is not always the easiest thing to do, but it should be done insofar as is possible. I think there is good evidence that the likelihood of irritation and/or sensitization developing, say, in a skin with eczema, is quite different than in a normal skin. Consequently, if the product to be tested is to be used on eczematous skin, it is dubious that any results obtained with it on normal skin will accurately foretell the potential hazard of the article in question. As to simulation of use conditions, this speaks for itself; however, it should be apparent, as I have already pointed out, that this lack of simulation of use conditions is a weakness in the tests suggested to determine the irritation potential of a given compound. Obviously, in testing a product to be used as a hair dye, which will be used at rather infrequent intervals, which will not be applied in an occlusive fashion, and which has—at least in its original form—a rather short-lived contact with the integument, there is little sense in applying it under an occlusive dressing for 24 to 48 hours.

From the point of view of statistics, there are two independent considerations that an investigator would wish to check. One is the likelihood of the results having arisen by chance. The other is the question of the fiducial limits of the results. I shall not consider tests for significance, since these are clearly set forth in texts on statistics. A few words on the fiducial limits of a result, that is, how far one can extrapolate from the data at hand to the larger, "infinite," population on whom it is hoped that the product will be used. I think it worthwhile to discuss this, even though briefly, for there seem to be some misconceptions. Suppose a sample population was patch-tested with a product and no reactions were obtained. What could then be predicted as to how many reactions would be encountered if the same test, under the same conditions, were made on an infinite population? Information on this is given in TABLE 8 taken

from Henderson and Reilly.[10]

TABLE 8
Upper Limit of Positive Reaction Rate Estimated for the Population, with a 95% Likelihood, from Results of 0, 1, or 2 Positives in a Sample of Size

No. of subjects in sample	Likely Maximum Rate of Positive Reactions in a Large Number		
	If no reaction in sample	If one reaction in sample	If two reactions in sample
800	.37	.56	.75
400	.75	1.1	1.5
200	1.5	2.2	2.9
100	3.0	4.4	5.8
40	7.2	10.8	14.0

Thus it is seen that, if a sample of 200 were tested and no reactions were obtained, all that one could say, at a 95 per cent confidence level (which means that this statement would be right 95 times out of 100, but that 5 times out of 100 it would be wrong) is that not more than 15 persons out of every 1,000 would react. It is obvious that this information is of little value to the manufacturer. The manufacturer usually counters with the question: "If I knew that I would not get, say, more than one reactor out of every 10,000 users, then I would be O.K. How large a sample would have to be tested to predict that this would be the case?" This information is given in TABLE 9, also taken from Henderson and Reilly.[10]

TABLE 9
Number of Subjects Required, If There are No Positives in the Sample to Predict with a 95% or 99% Likelihood That the Population Rate Does Not Exceed Certain Designated Values

Maximum Permissible Percentage of Reactions in the Population	No. of Subjects for Likelihood of	
	95%	99%
0.01	29,978	46,083
0.1	2,994	4,603
0.5	597	918
1.0	298	459

It is thus seen that, to get an answer to the explicit question posed, one must study approximately 30,000 subjects. Obviously, nobody is in a position to do this. The point of all of this is that it is important to realize that extrapolation is uncertain. At present, a manufacturer has a certain appraisal procedure made and obtains what appears to him to be a very satisfactory result. The product is then put on the market, and proves to be a dud from the point of view of the number of reactions encountered. He then tends to blame the investigator; whereas, if a proper explanation had been given him concerning the limited amount of extrapolation that can be carried out from any results, he should not have been surprised that the results in the larger population did not support his sanguine hopes; for, essentially, this is attempting to peer into the unknown future, and it is not given to man to be able to do this.

So far, this article has primarily been of a "destructive" nature in pointing out the weaknesses of various procedures that have been suggested. I should not like to end in this vein, hence, I should like to conclude with a few suggestions as to how predic-

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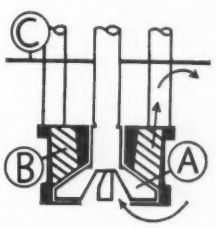

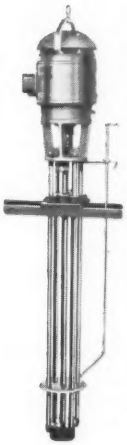

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7-H	20	3500	5.625"	to 1000

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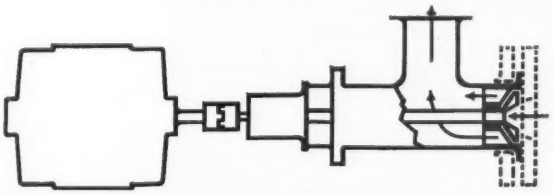

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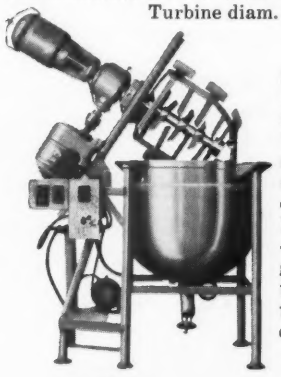

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tive procedures might be made more trustworthy. I think it would vastly repay industry to support research in this field. I would suggest investigations on the following lines:

1. A larger number of animal species should be studied, and correlations should be made among the various species. More importantly, the human species should be used for the same studies at the same time, so that correlations could be made between the animal species used and the human. It might be found that a certain procedure on a certain animal correlates reasonably well with the human, which would be an extremely valuable bit of information.

2. Purebred strains of animals should be developed and used by all the investigators in this field. This is particularly important from the point of view of predictive studies for allergic sensitization, in that, as I have already pointed out, one of the biggest handicaps in such studies is the genetic variability of the animal population. If homozygous strains that were uniformly sensitizable with respect to some given compound were bred, while this would not guarantee that they would be uniformly sensitizable to some new unknown compound, it would at least make it more likely.

3. Finally, and I think this the most important point of all, research should be carried out to find a more delicate indicator for irritation or sensitization than the present one, which is essentially the gross visual appearance. It is obvious that the visual appearance, namely, the inflammatory response, is only the culmination of a sequence of events that have taken place in the animal and ultimately eventuated in the inflammatory response. It is certain that various biochemical alterations take place, which lead to the inflammatory response. Hence, studies of the biochemical alterations going on during the development of an irritation or sensitization would provide a means by which these could be recognized in their earliest stages. Such a technique would presumably be far more reliable than the present crude visual one, but, above and beyond this, such information would be invaluable in the understanding of inflammatory processes and possibly usher in a new era of safety in the use of drugs and cosmetics.

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SAFE COSMETIC FORMULATION

(*Continued from page 591*)

scientists who are able to blend together raw materials to create esthetic and attractive cosmetics. Formulation skill is developed with experience and is nurtured with education.

It takes additional skill to extend a laboratory formula to large-scale production, and here again, the knowledge and experience of the formulator contribute to the safety of cosmetics. It is highly important that every batch of a cosmetic be identical in all respects with the preceding lots, and this necessitates the establishment of detailed and controlled manufacturing procedures for each product. This can be accomplished only by exerting continuous, close, rigid control over each step in the manufacturing process, because very often a minor change in temperature or in speed of mixing, or a modification of some other step can result in an improperly made product whose safety might be questioned.

Supplementing controlled manufacture is a quality control program. By this I mean that each cosmetic manufacturer must have an adequate system for checking both qualitatively and quantitatively the products that come off of his lines—and the authority of the control laboratory must be clearly established. Standards for physical properties of the cosmetics must be maintained, and assays for any active ingredients should be routine.

There are additional ways in which the safety of a cosmetic can be enhanced. One of these is by proper packaging. Few people realize the important role that a container plays in establishing the safe use of a cosmetic product. By their very nature, most cosmetic preparations are perishable and many of them are easily broken down. The packaging of a cosmetic must be such that the product can be kept in it indefinitely without reacting with the container itself, and it must be protected as much as possible by the container; yet the product must be readily accessible to the user.

Still another contribution to the safety of a cosmetic is the label on the container—and this is an area in which some cosmetic manufacturers have been lax. For maximum safety I believe that all cosmetics should have clear and adequate instructions for their use printed on the labels. Too many of the creams and lotions currently on the market have no such instructions. Some labels identify products as hand creams or skin lotions, and they may even state that the product softens the skin or cleanses the pores or prevents chapping, but they do not say how much should be used, how often it should be applied, or how it should be applied. It seems to me that, for maximum effectiveness, clear instructions for use are a necessary part of any product used by intelligent people. In addition, the label should indicate any ingredients which might conceivably cause man-

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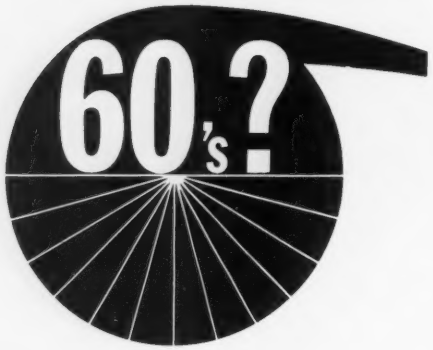

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ifestations of sensitivity in allergic individuals.

Proper advertising and promotion of a cosmetic can further help make it safe. I feel that true and possibly conservative claims for any product will be an added factor in promoting its safe use. More and more cosmetics are being developed to produce specific actions, and more and more scientific evidence is being used as the basis for claims. Thus, if the consumer is told what a cosmetic should do, and how to use the cosmetic to make it accomplish its purpose, the possibility of misuse is minimized.

Finally, I have listed continuous research as a component of safe cosmetics. It is now evident that the cosmetic industry must support long-range research projects of a fundamental nature if it is to continue to serve the public. The formulator of today must apply the findings from theoretical research works to his problems, and he must be able to call upon workers in other fields to supply him with scientific proof of an item's merits.

Thus, it can be seen that safe cosmetics just don't happen, nor are they developed entirely in the laboratory. They are achieved by the application of scientific principles to their production, distribution, and ultimate use; but the one person who, more than anyone else, is responsible for them is the man who formulates them, the cosmetic scientist.

The problems involved in developing a safe cosmetic are many and varied, and a major contribution to the safety program of the industry has been the cooperation among the cosmetic manufacturers in sharing information. The literature of the cosmetic scientist presents an interesting picture of the nature of the problems with which he is confronted. As an example, let us look at some of the topics that have appeared in the cosmetic journals in the past few years.

PROBLEMS OF THE MODERN COSMETIC SCIENTIST

1. Pitfalls in evaluating the safety of cosmetics
2. Molecular forces in permanent waving
3. Percutaneous absorption and surface active agents
4. The rheology of pastes, suspensions, and emulsions
5. The effect of pH on the efficiency of various mold inhibiting compounds
6. The interference of nonionic emulsifiers with preservatives
7. The nature of oxidative deterioration of cosmetics
8. Mechanical treatment of emulsified products
9. Polyhydric alcohol esters for cosmetic use
10. Topical steroids in ageing and senile skin cosmetics

Consider here the background that one must have to interpret this literature and apply the findings to a formulation problem. In these ten articles alone we find subject matter ranging from organic chemistry to physics and from production techniques to biological and physiological phenomena. Thus the term "cosmetic scientist" is indeed an appropriate description of the formulator of modern cosmetics. He must have both academic training and industrial experience, and he must be able to apply the theory he has learned to practical situations. If we were to delineate the main areas with which the cosmetic

formulator is concerned, we would have the following picture (FIGURE 2).

He must be intimately connected with production, since it is in the manufacturing department that his creative efforts are consummated. The origination and development of the product start in his laboratory, but always in the back of his mind is the objective of reaching full-scale production.

During his formulation work, the cosmetic scientist must consider the way in which his product will be presented to the public. He must build into it the properties that will lend credence to the claims made when it is turned over to the advertising department.

The cosmetic scientist is directly concerned with the sales potential of his creations. He must consider the stability problems previously mentioned, as well as the most desirable kind of packaging for each product he makes.

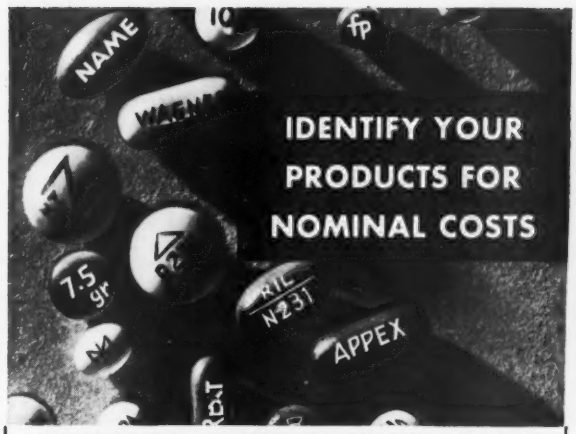
Last—but certainly no less important—is the knowledge that the formulator must have of the biological sciences. The ultimate fate of all cosmetics is use by a human; the effects of using the product are a primary consideration when it is originated, and any possible reactions to it must be anticipated and considered.

It can be seen that special academic training is necessary for the person charged with the responsibility of producing safe cosmetics. In his studies he must have been well grounded in the physical sciences in which chemistry and physics have been thoroughly covered. He must have a good background in the biological sciences, particularly in the areas of physiology, pharmacology, and bacteriology. He must have a sound knowledge of public relations in as much as communications and advertising are concerned; and he must know the essentials of compounding, manufacturing, and production.

Where can such a person be found? One well-qualified candidate is the modern pharmacy graduate. Consider some of the courses in the curricula of our schools of pharmacy.

The essence of pharmacy, of course, is compounding—and manufacturing is the process of compounding in large quantities. The pharmacy student is given organized instruction in these areas. As part of his preparation for the business world, he takes courses in law, merchandising, and management, supported by studies in psychology and economics. The close relationship between cosmetics and pharmaceuticals is further realized when one studies physiology and pharmacology, both of which are required for all pharmacy students. I suggest that the *cosmetic pharmacist* is emerging as a highly specialized scientist who will play an increasingly important role in the future development of safe cosmetics. This is particularly true of those pharmacists who do graduate work and can take specialized courses in product formulation and cosmetic technology.

However, besides the qualifications already listed, the cosmetic pharmacist must have two intangible



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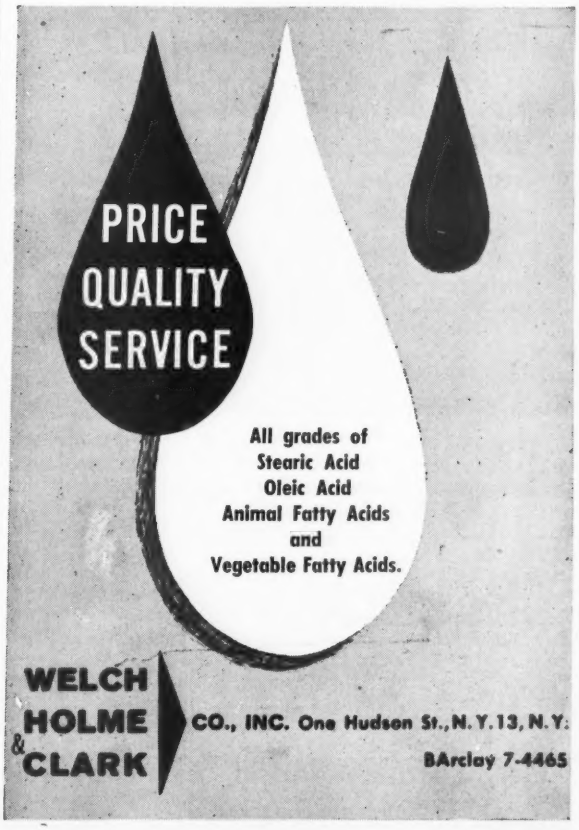

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attributes: he must be a creative and a versatile individual, and he must have the imagination and originality which will lead him to try new ideas. The heart of the cosmetic industry is the man who produces new ideas and nurtures them to fruition. Today, more than ever before, inventiveness and original ideas are needed for the formulation of safe cosmetics, particularly in view of recent developments in which certain ingredients have been cited as being possibly carcinogenic. As an example of original formulation, let us consider how a safe cosmetic might be developed.

Considering the very safest materials that might be used in cosmetics, the idea of foodstuffs come to mind. Certainly some of our common foods are accepted as being safe for human consumption—why could they not be used for external application as well? They offer most of the types of materials needed for cosmetic formulation: oils, creams, starches, proteins, and lubricating and protective materials; and their safety has been established beyond doubt. Why, then, not make cosmetics from selected foods? This idea is not entirely new, because we know that some cosmetics do contain edible components, but to my knowledge no intensified program of this nature has been undertaken. I have found references in which whole milk has been suggested as a treatment for burns,[2,3] and earlier this year a report was made in which edible snails were homogenized and incorporated into cosmetic creams to produce emollient effects.[4] So, in order to prove a point, we have been working on the formulation of cosmetics from foods, and I present to you two products as examples of what can be done by the cosmetic formulator.

The first is a complexion lotion which we call Peaches and Cream Lotion because these materials are the two main ingredients of the product. A second preparation is a hand cream made essentially of tapioca. If these preparations were subjected to clinical testing and could substantiate any claims made for them, they might well be the forerunners of a new class of cosmetic preparations. However, it must be pointed out—and emphasized—that, if foodstuffs are considered as components of cosmetic products, only those materials that might serve some useful purpose should be used. *Utility* rather than novelty should be the first thought in formulation of such products.

I am not suggesting that cosmetic manufacturers make all their preparations out of food, but I cite these examples to prove my point, which is that, with a little originality and the application of sound principles of safe formulation, a competent person can produce safe cosmetics from a limited number of raw materials. Experimentation of this nature may well be the solution to problems that may arise as the result of future regulations concerning cosmetic ingredients.

The future of cosmetics will be determined by the men who formulate them today, and already several

trends are being established which encourage me to make several predictions (FIGURE 3). What will cosmetics of the future be like? They will be better than ever. One contributing factor to this will be more control over their manufacture and sale by governmental agencies. It is expected that an amendment to the Food, Drug, and Cosmetic Act will be passed which will require extensive tests for safety before new cosmetics can be marketed, and other regulations governing sales and advertising are inevitable. We will see an ever increasing number of what I will call "therapeutic cosmetics."[5] Some of these are already on the market and more are sure to follow. These will be cosmetics formulated for a specific physiologic and/or pharmacologic action; and by their use many dermatological problems will be solved. We will have in this category cosmetics with sustained action, as some of our drug preparations now are.

A specialized area of cosmetics that will expand is seen in the field of hypo-allergenic products. It has been estimated that over 15 per cent of all women who use cosmetics (approximately seven million) are allergic to some form of cosmetic—and a high percentage of them are not aware of the cause of their trouble.[6] As increasing emphasis is placed on safety of use, more formulation of these products will result.

I believe that an entirely new branch of cosmetics will be evolved. We may call this the field of geriatric cosmetics. We have approximately 30 million people in the United States who are 55 years of age or older; if the present vital statistics continue in the same pattern, we will have 45 million of these senior citizens by 1980. Just as we now have geriatric medication, so will we have geriatric cosmetics specially formulated for elderly people, and these products will be scientifically formulated to benefit aging skin.

Finally, I think that within the next decade the American male will be using cosmetics almost as much as his wife. In the past ten years we have seen the development of men's grooming aids considerably expanded; the trend is already established and it is only a matter of time before treatment lines of cosmetics for men will appear on the market. We will find men using creams and lotions for their skin and possibly even using conservative types of make-up. It remains only for an advertising campaign to convince the public that a man does not sacrifice his masculinity by using cosmetics freely.

The science of safe cosmetic formulation has evolved from the efforts of our cosmetic industry to provide the very best aids to personal attractiveness possible, and the American public can look forward to being the best groomed people in the world.

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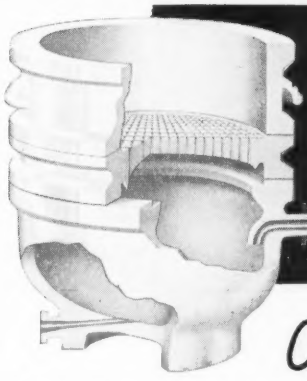

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